

THE IRON AGE

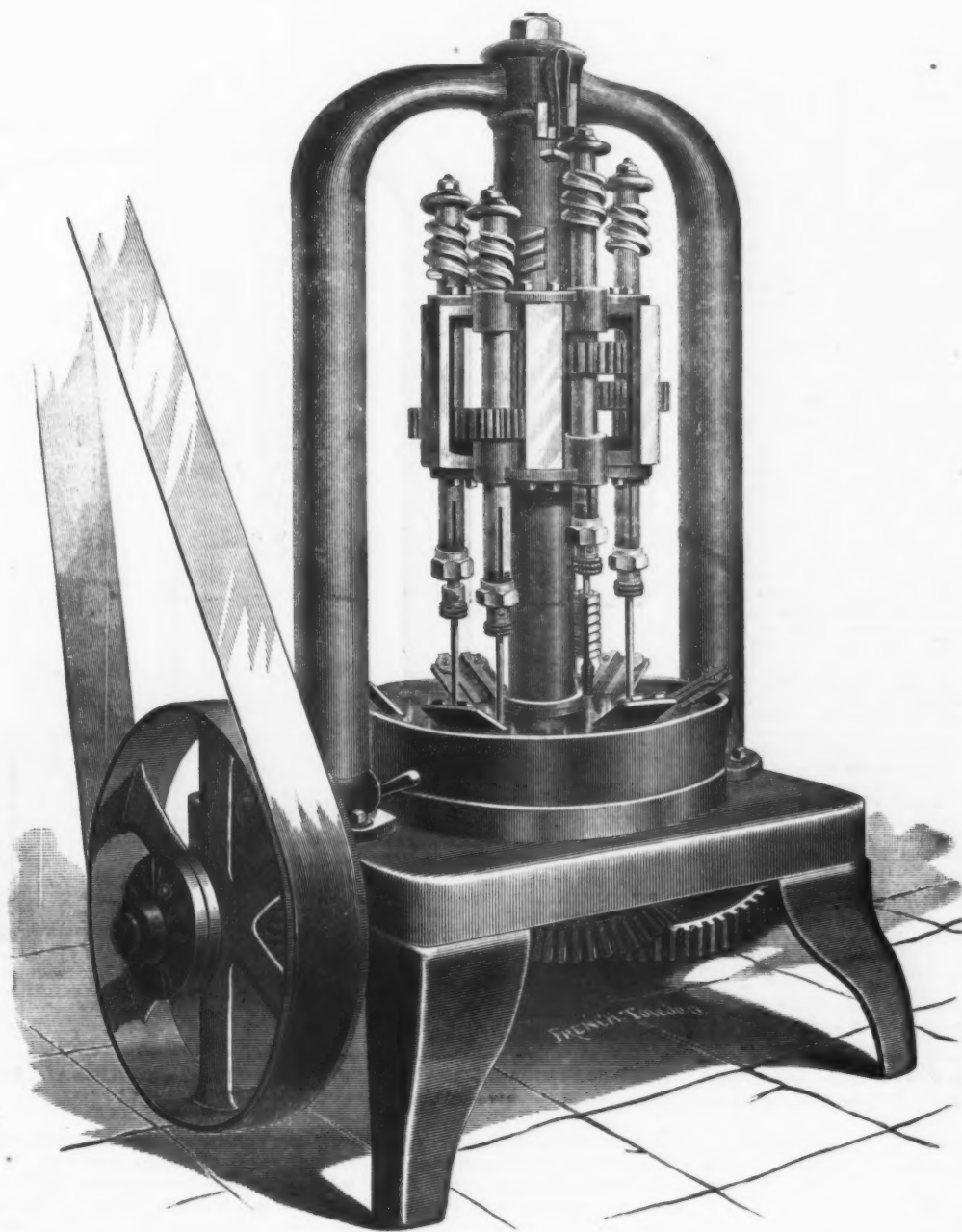
THURSDAY, MARCH 21, 1889.

Automatic Vertical Tapping Machine.

The accompanying engravings show a vertical tapping machine, designed for tapping nuts from $\frac{1}{4}$ inch up to 2 inches, or larger, if desired. The machine is made by the National Machinery Company, of Tiffin, Ohio. They are made in the form

are suitable for $\frac{1}{4}$, 1, $1\frac{1}{2}$ or 2 inch. On the driving shaft is a beveled pinion which drives a vertical shaft in the center of the column. On the lower end of this shaft, just below the beveled gear, is a pinion which meshes with a large spur-wheel shown plainly under the bed-plate of the machine in the sectional view. This large wheel is secured to a vertical shaft, which

a sufficient end motion of the tap spindles to raise the taps out of the nuts, and also to allow them to tap clear through the nuts. At the upper end of each of the tap spindles is a 3-inch pitch double-threaded screw, surmounted by a disk, which is loose on the spindle. On top of the central column is a sleeve, which is prevented from rotating with the column



AUTOMATIC VERTICAL TAPPING MACHINE, BUILT BY THE NATIONAL MACHINERY COMPANY.

illustrated in order to do away with the labor of raising and lowering the heavy tapping spindles, which are made of 2 $\frac{1}{4}$ -inch steel and carry a gear-wheel, tap-holder and filled tap. When revolving, the machine raises each tap as it comes before the operator, who need not be, of necessity, a skilled mechanic. The belt pulley is loose on the horizontal shaft, and is constructed so that it can be made fast to the shaft for light work, or it may be arranged to drive the shaft by an external back gear for heavy work. The speeds

carries another pinion meshing into teeth cast in the lower edge of the pan, which is by this means caused to rotate at the rate of one revolution to 33 of the tap spindle. Allowing 30 revolutions on the tap, there will be some three or four revolutions left after the nut has been tapped, during which, to change the tap, replace the nut, &c. The vertical shaft also carries a large pinion, with very wide face, into which the six gears of the tap spindles mesh. The length of face of the large central pinion is large enough to allow of

by a spring on a frame supporting the top of the center column. This sleeve carries a spiral rack and flat bench, followed by an incline. As each tap spindle comes around its screw engages in the spiral rack, which raises it; when it reaches its highest position the disk on the top of the shaft passes over it and down the incline, the spindle drops down and the tap enters the nut which has been placed for it. The pan is filled with water to within 2 inches of the top, and has $\frac{1}{4}$ inch of oil on its surface. The nut is submerged in oil

while being tapped. The spindles are provided with patent tap holders, which permit of their being removed and emptied when filled with nuts without stopping the machine, which will tap 6000 to 8000 $\frac{1}{4}$ -inch nuts in 10 hours.

The Redemann-Tilford Steel Process.

For some time past a number of accounts have reached us of a new process for treating steel, brought out in Louisville by the Redemann-Tilford Steel Company, of that city. We have not been able to secure an intelligible description of the method itself, which appears to consist of heating steel to a certain temperature, according to the results to be obtained and the character of the metal. The heated steel is then plunged into a "chemical composition," in which it is allowed to cool. H. J. Tilford, the secretary of the company, has forwarded to us a number of documents to show what has been accomplished. It appears that an application was made to the Pittsburgh Steel Casting Company for some of the metal from which the cast gun was made. They had none of it left in convenient pieces, but forwarded pieces from a 9-ton wheel, which was approximately the same metal. After treatment they were returned, the Pittsburgh Steel Casting Company reporting on the matter as follows:

Our superintendent, Mr. Hainesworth, who examined them, noticed small cracks on end where drilled and expected them to fly to pieces with light blow of hand hammer. The foreman was instructed to test them under a 1000-pound steam hammer, with a pressure of steam estimated at 70 pounds on a 12-inch piston, which, of course, exerts a greater force than the weight of ram itself. The pieces were placed on support 6 inches apart, as shown on sketch inclosed, the fall of ram being 14 inches. The hardened piece, $2\frac{1}{4}$ inches diameter, was struck 11 blows before breaking; this we considered a very strong piece of steel; grain fine and silky. We could not machine the outside, but could drill in end after breaking. The toughened piece of steel, $2\frac{1}{4}$ inches in diameter, was the strongest piece of steel our superintendent has ever seen. It stood the following test: 17 blows steam hammer; then piece reversed and struck 14 blows steam hammer; no break; then nicked all around and struck 10 blows steam hammer; 3 blows 250 pounds weight falling 24 feet; 1 blow 1500 pounds weight falling 24 feet; broke; grain fine and silky. A piece of each will be expressed to you, marked *38. It certainly was a remarkable change in the steel.

A report of tests made at the works of Carnegie, Phipps & Co. gave the following:

	Toughened.	Hardened.
Tensile strength.....	83,820	98,600
Elastic limit.....	43,870	83,600
Elongation.....	9% (in 2 in.)	0.05% (in 4 in.)
Reduction of area.....	14.04%	none.

In an affidavit made by G. W. G. Ferris, of Ferris & Co., inspectors, report the following as the results of tests made by him:

	Treated.	Untreated
Elastic limit.....	96,720	50,320
Maximum load.....	141,700	72,460
Elongation:		
In 4 inches.....	8.25	8.00
In 8 inches.....	5.50	11.00

A later test showed an elastic limit of 118,850 pounds and a maximum load of 167,250 pounds per square inch, with an elongation of 6 per cent. in 4 inches.

So far as the chemical changes are concerned, the following analyses were reported by W. L. Abbott, of Carnegie, Phipps & Co., Limited:

	Carbon.	Silicon.	Sulphur.	Phosphorus.	Manganese.
Treated and annealed.	0.46	0.061	0.058	0.100	0.89
Treated bath.....	0.46	0.049	0.05	0.098	0.92
Tempered water.....	0.20	0.042	0.074	0.148	0.90
Not treated.....	0.25	0.042	0.062	0.150	0.90

Dr. Fricke, of Carnegie, Phipps & Co., Limited, reports the following:

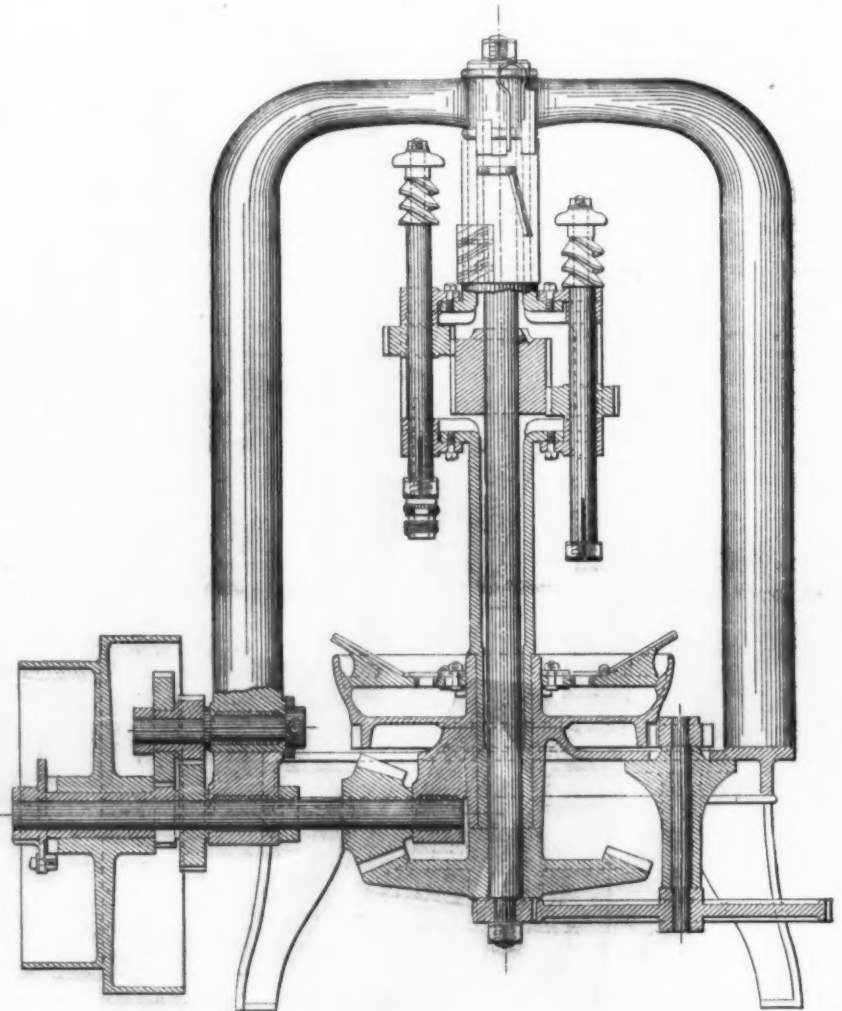
	Treated B.	Not treated.
Carbon.....	0.45	0.28
Silicon.....	0.040	0.044
Phosphorus.....	0.110	0.162
Sulphur.....	0.052	0.072

The samples were received through J. B. Booth & Co.

Manual Training.

The subject of industrial training is treated thoughtfully in a report to the Pennsylvania Legislature by a commission appointed by that body, comprising the presidents of the Pennsylvania State College,

branch of the general school system, or of a special course in connection with one or more schools. The manual training schools introduce into their curriculum the same educational studies as are found in other schools, and aim thus to develop the intellectual faculties not less than the physical. In the same way shop-work, when introduced as a part of the prescribed course of any public school, is not allowed to diminish the amount of attention given to other studies; and it is found that the school time which would thus at first sight appear to be lost to those studies is fully made up and often more than made up by the increased freshness, aptitude and mental alertness which the pupil acquires from his manual exercises.



AUTOMATIC VERTICAL TAPPING MACHINE.—SECTIONAL ELEVATION.

the president of Girard College and others well qualified to investigate the subject. The commission prepared a bill for the general introduction and maintenance of a system of manual training in connection with the public schools, and ask for an appropriation of \$500,000 to carry their scheme into execution.

The new movement for popularizing manual training as a part of public school instruction, the report states, began about ten years ago with the establishment of the St. Louis Manual Training School. Since that time, but particularly within the last five years, it has spread very rapidly, until it has come to be a factor of the greatest importance in public education in many parts of the country. An account of the most important institutions of this kind in the United States appears in the appendix to the commission's report. Some of these institutions are of a special character, privately supported, and others form a

The commission are persuaded that manual training processes in the public schools have become well enough established to enable any community to enter upon them intelligently and successfully; that the training involves no great expense or difficulty, and that it should be introduced as rapidly as possible into every grade, beginning with kindergarten work. It will not diminish the vigor and efficiency of the public schools, but will increase both; it will not divert our children away from industrial pursuits, but direct them toward them; it will not result in the teaching of trades by the public schools, but will train the body of youth intelligently prepared to enter upon all trades; it will not interfere with the highest intellectual training of those who are designed for professional pursuits, but will give a body of common knowledge and common skill which will be of incalculable value to the students of all professions; it

will not lower the standard of instruction, but will elevate it; and apart from its influence on the schools, it will help to give dignity and efficiency to every form of useful labor. Wherever an attempt has been made to introduce manual training into the public schools—whether in a special school, as in Philadelphia, or in the general system, as in New York, New Haven and many other places—whether it has been supported by appropriations from the municipal treasury or by private contributions of public-spirited citizens, the result has been the same; teachers, pupils and parents vie with each other in their testimony to its healthful and beneficial influence.

48-Inch Hydrostatic Car-Wheel Press.

In this press, which is made by the Putnam Machine Company, of Fitchburg, Mass., the ram has two speeds. The

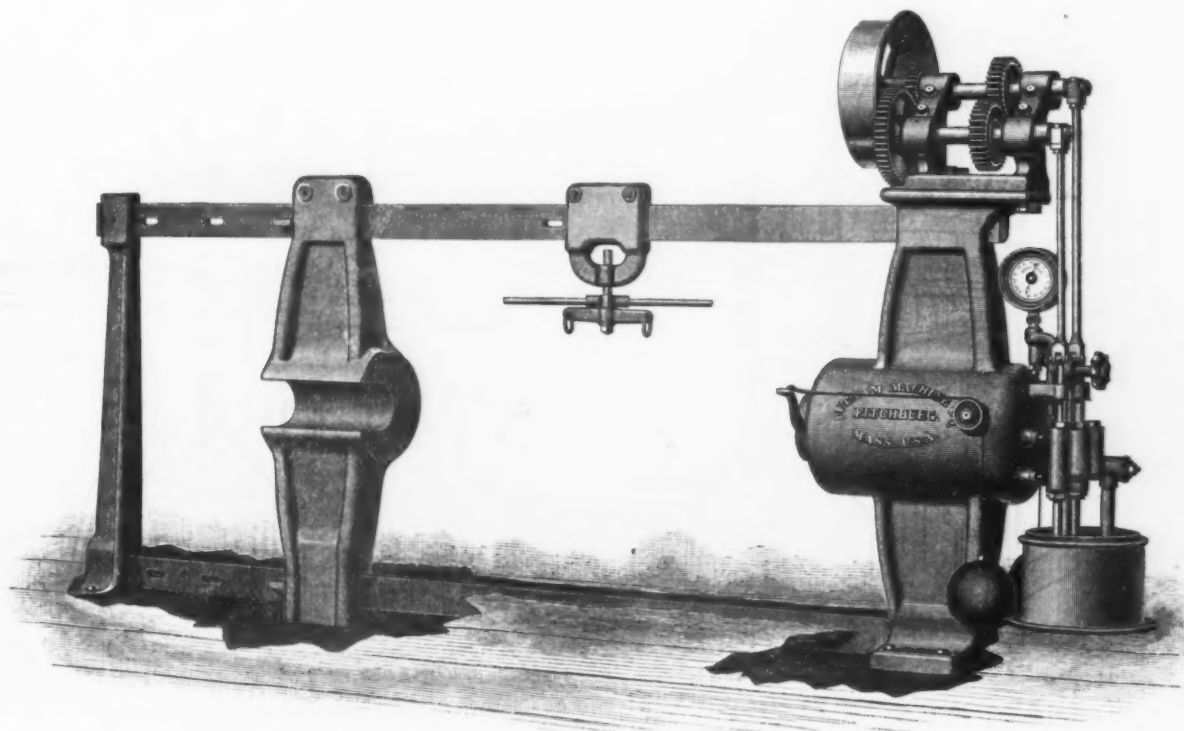
tons. Adding Georgia we make a total of 65,000 tons. In January the output was 66,575 gross tons, thus showing an increase from 2147 tons a day in January to 2328 tons a day in February.

Turner, Dickinson & Co.'s New Foundry.

Among the recent additions to the manufacturing establishments of Chicago is the foundry of Turner, Dickinson & Co. It is located on the Omaha branch of the Chicago, Milwaukee and St. Paul Railroad, very close to Holstein Station, at which all passenger trains stop. The lot is 316 feet long by 132 feet wide, and is bounded by Hoyne avenue, Churchill street and Zelma place. These streets and the railroad running alongside the property prevent the erection of other buildings close enough to interfere with light and ventilation. Over half of the lot is retained for yard

the walls of the building. The roof is also strengthened by trusses placed outside of the building instead of taking up valuable space inside. The entire ground floor of the molding-room is entirely free from pillars, permitting the unobstructed use of the cranes. The central space between the hanging floors is 52 feet by 60 feet, and its height enables a large swinging crane to be put in, which reaches over its entire area and has a lifting capacity of 15 tons. An unusually large ventilator with large windows runs the full length of this central section. Light molding or snap work will be done on the hanging floors, which so greatly increase the available space that 62 molders can easily work in this one room.

The cupola stands outside of the molding room, in one of the rooms between it and the yard. An elevator conveys stock to the cupola from the yard. It is of the ordinary pattern and will melt 25 tons a day. A



48-INCH HYDROSTATIC CAR-WHEEL PRESS, BUILT BY THE PUTNAM MACHINE COMPANY.

plunger of the quick-acting pump is $2\frac{1}{2}$ inches, and of the high-pressure pump $\frac{3}{8}$ of an inch. Both plungers act in concert to a pressure of 15 tons, after which the smaller one does the work up to a pressure of 150 tons, if required. This gives a double quick action to the ram up to the point when the larger plunger ceases to work. The cylinder is lined with copper, and the ram is $8\frac{1}{2}$ inches in diameter and has a run of 20 inches. The foot-block is suspended on rolls and is adjustable to position. The press weighs 7500 pounds and is furnished with roller lifting jack, pressure gauges, lock-up safety valve, liquid tank, return weights and counter-shaft having tight and loose pulleys 18 inches in diameter by 5 inches face.

In February 18 coke furnaces, which were in blast a part or the whole of the month in Alabama, produced 41,094 gross tons of pig iron. One furnace did not report its output, which is estimated at 3200 tons, making a total of 43,294 gross tons. It must be remembered that the month had only 28 days. In the same time the Tennessee coke furnaces produced 20,003

purposes, into which a side track runs for the convenient receipt of stock and shipment of goods. Sheds are built on both sides of the track for the storage of sand, coke, wood, &c. The arrangement of the foundry buildings is peculiar and worthy of detailed mention. They are built of brick, with gravel roofs, and have as many windows in the sides as a due regard for the strength of the walls will permit. The entire ground space covered is 100 feet by 132 feet, the buildings extending the full width of the lot. A depth of 40 feet next to the yard is one story high, and is divided into a number of rooms, including the shipping-room, cleaning-room, tumbling-room, cupola-room, case-room, engine-room, pattern-room, machine shop, &c. The remainder of the structure, 60 feet deep by 132 feet long, is the molding-room, extending a height of 50 feet in the clear in the center and 30 feet on the sides. This room is unusually light, and its height enables a hanging floor, 40 feet by 60 feet, to be constructed on each side, midway between the roof and the ground. These floors are suspended from the roof and are also partly supported by heavy trusses extending along their inside edges between

Baker blower is used. Another cupola is shortly to be erected at its side which will have a capacity of 10 tons. A Buckeye automatic cut-off engine of 60 horse-power operates the blower, tumbling barrels and other machinery, consisting of drills, bolt cutters, taps, &c., used in finishing. The core-oven is 17 feet long, and is fitted with a railroad track, so that an iron car can be loaded with cores, pushed in, and after the cores are baked it is drawn out, saving the handling of the cores.

A specialty of light fine castings is made by these works, and their products are consequently of a miscellaneous character, running from hardware to piano frames, embracing door hangers, fire-escape platforms, steps, round-house hoods, &c. The manufacture of the latter is especially difficult, as the castings are very thin yet of large size. To be used in connection with these hoods cylindrical pipes are cast running from 2 to 6 feet in length, 20 inches in diameter and but $\frac{1}{8}$ inch thick. Although composed of young men, the firm are doing very creditable work, overcoming difficulties which have prevented older establishments from rendering entire success to their patrons.

Universal Milling Machine Attachments.

In our issue of January 17, 1889, we described and illustrated a universal milling machine built by Pedrick & Ayer, Philadelphia. In this issue we present several engravings intended to show the method of working several important attachments. In Fig. 1 the cutter arbor supporting bar is run out, and is provided with center support and bracing harness, which prevent any tremor of the bar. On the arbor is a 12-inch inserted tooth mill, suitable for milling and sizing out between flanges of castings, &c. The harness is also used when large cutters are placed a long distance from the spindle, or when heavy boring is done. The slots in the braces (these are upside down in the cut) allow the platen to be raised or lowered by simply loosening the two screws. The four following cuts show the work that may be done with the vertical or angular attach-

at an angle bevel gears may be cut. Spur gears up to 5 feet in diameter can be cut with this attachment. Fig. 2 shows the attachment arranged for drilling holes parallel with the platen. In Fig. 3 a V-block is being milled at an angle of 90°, the horizontal feed being used. By using other tools the whole piece can be finished with one chucking except the base. Fig. 4 shows how angle cutters can be milled and bevel gears cut. The index head can be turned around to any angle. With work held in a chuck, hollow mills, counter bores and a great variety of tools can be cut in this position. The index has a circular base, with a graduated plate with a tongue fitted to slot in milling machine platen. When in use for ordinary straight milling a spring pin holds the head square; for angular work the pin is pulled out of position from the bottom index-plate, which is divided into 360 divisions—a feature that will be appreciated. The head is centered to bottom plate by a king

angle. The jaws, of hardened steel, are 8 inches, with a depth of 2 inches, opening 5½ inches. Fig. 6 represents the machine used as a horizontal boring mill. By extending cutter arbor supporting bar and using a fixture with bushings to receive the boring bar holes 12 inches deep can be bored out. By substituting a traveling head boring bar with an automatic feed on the outer end cylinders from 3 to 14 inches can be readily bored out. The knee platen and bearings are of sufficient strength to support heavy weights, and the machine has power enough to drive the bar with heavy cuts.

Electric Welding.

By invitation of H. A. Royce, general manager of the Thomson Welding Company, of Lynn, Mass., members of the Boston press witnessed an interesting exhibition of electric welding at the station of the Malden Electric Company, Malden,

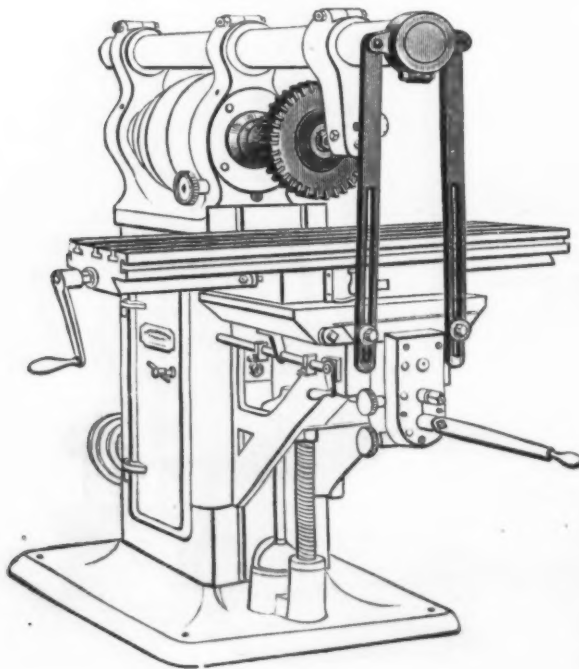


Fig. 1.

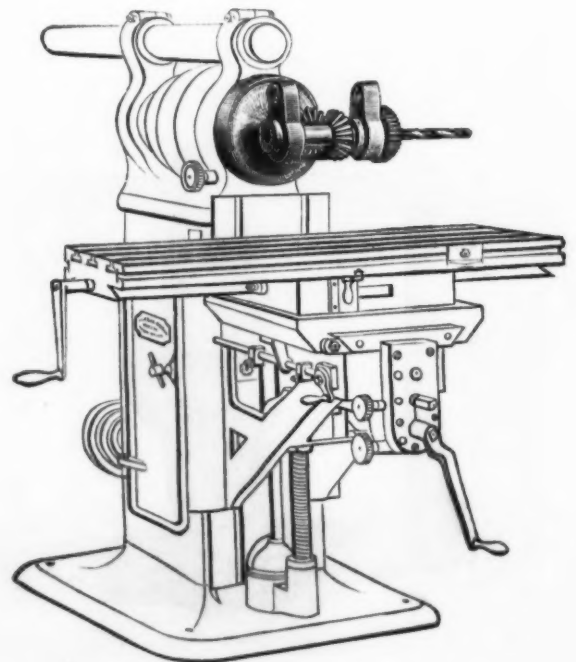


Fig. 2.

UNIVERSAL MILLING MACHINE ATTACHMENTS, BUILT BY PEDRICK & AYER.

ment, which is secured to the head of the machine by four bolts. It is driven by a socket fixed in the spindle of the milling machine, which is key-seated to fit the keyed stud in the attachment. Through the medium of a pair of miter-wheels this stud drives a spindle at right angles to the vertical attachment. This spindle is geared with a shaft in line with it, which is utilized as a cutter or saw arbor for cutting racks, sawing up stock, &c. This shaft runs in bronze bearings, and can be removed from the attachment by means of the two clamp-screws in the clamp bearings. This attachment can be used either vertically, horizontally, or at any angle around the center, the base being graduated to register its position. Cutter arbors or boring bars can be used in either end of the main spindle. For rack-cutting there is no limit as to length, while for boring or milling castings of irregular shape or troublesome to hold in other tools it will be found very useful. In cutting large gears the cutter spindle is placed vertically and the index head at right angles to the platen. The gear blank is then fed in line with the main spindle of the milling machine. By setting the platen

bolt, and is held to platen in its various positions by two steel bolts and clamps. The spindle is of steel, 3 inches in diameter, threaded to receive a chuck-plate; it has a taper reamed hole through it from 2 to 1½ inches at small end. The worm and worm-wheel are accurately made and compensating for wear. For cutting spirals the worm gets its motion from a pair of spiral gears instead of miter or bevel gears; they are inclosed to exclude the chips and dirt; the index wheel is also completely covered for the same purpose. Spirals, either right or left, can be cut. Bevel gears and bevel cutters can be cut on this head with the vertical and angular attachment. The universal vise shown as an attachment in Fig. 5 is adapted to swing from a horizontal to a vertical plane or at any angle therein. A graduated plate, with a central stud, fills the hole in the base of the vise, enabling it to be set at any angle. It can be held in any position on the trunnion by clamping the body of the vise with the two nuts shown in the cut. A graduated dial on the trunnion, marked by degrees, gives the angle to which the vise can be thrown, facilitating the milling or planing of work at an

angle. The jaws, of hardened steel, are 8 inches, with a depth of 2 inches, opening 5½ inches. Fig. 6 represents the machine used as a horizontal boring mill. By extending cutter arbor supporting bar and using a fixture with bushings to receive the boring bar holes 12 inches deep can be bored out. By substituting a traveling head boring bar with an automatic feed on the outer end cylinders from 3 to 14 inches can be readily bored out. The knee platen and bearings are of sufficient strength to support heavy weights, and the machine has power enough to drive the bar with heavy cuts.

Mass., on Monday evening, March 4th. The following experiments were successfully made on three machines of graduated capacity, welding ¼-inch copper rod, ¼-inch brass rod, ¼-inch iron rod, 1-inch iron rod, 2-inch iron rod and 2-inch iron pipe. The operation consumed from 8 to 75 seconds, according to the size of the pieces welded. To show the strength of the weld, a rod was twisted until it broke, but not at the welding point. The welding plant consists of a dynamo of special construction, wound for supplying alternating currents of 300 volts potential, and three welders or welding coils, which are so constructed as to transform the currents supplied by the dynamo into currents of very low electric motive force. The welders consist of a core of iron composed of disks of sheet iron bolted firmly together, through the center of which passes a copper tube, constituting the secondary of the machine. Coils of fine copper wire are then inserted through the tube or secondary and over the core of iron, the fine coils forming the primary of the machine. The currents from the dynamo are sent through the primary coil, and by induction heavy welding currents of low electric-motive



WILLIAM B. BELKNAP.

force are generated in the secondary. These currents are made to pass directly through the pieces to be welded, and when the metal is heated pressure is applied and the weld thereby completed.

These machines were illustrated some months since in *The Iron Age*, but since that time they have been modified so as to

The New Appraiser's Stores.

It appears from Washington dispatches that the vexed question concerning the location of the appraiser's stores in this city has been finally settled by a decision of the Treasury Department favoring the up-town location. This selection is in ac-

size of the present stores on Laight street, a few blocks below. The price paid is less than \$500,000. When the improvements contemplated by the Dock Department on Thirteenth avenue are completed, between West Eleventh street and Twenty-third street, the new stores will front on the river. The buildings that occupy the

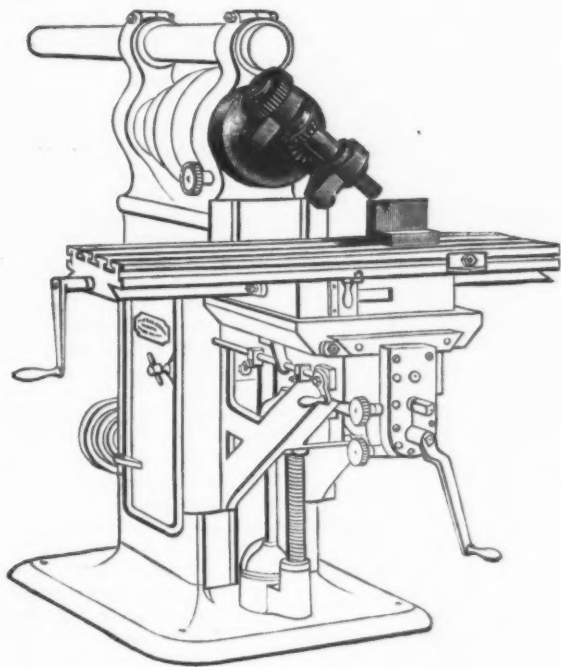


Fig. 3.

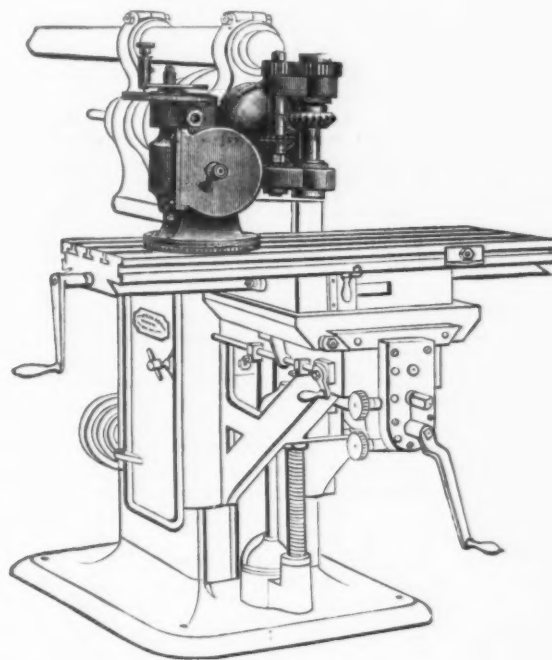


Fig. 4.

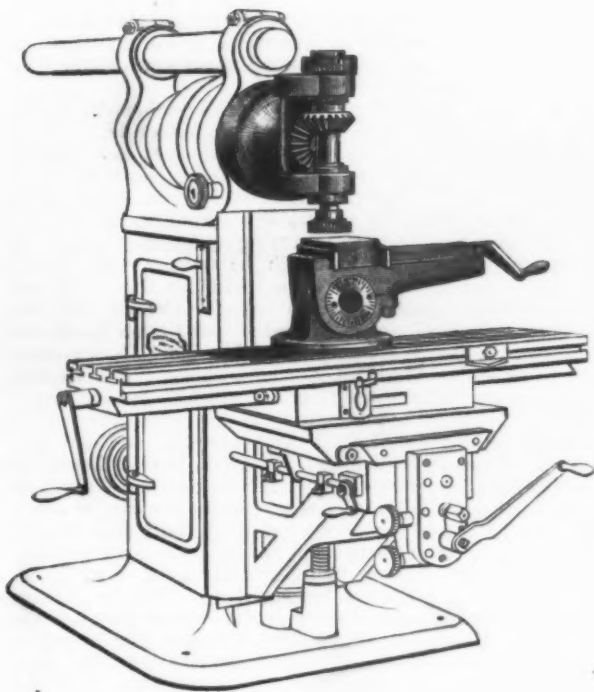


Fig. 5.

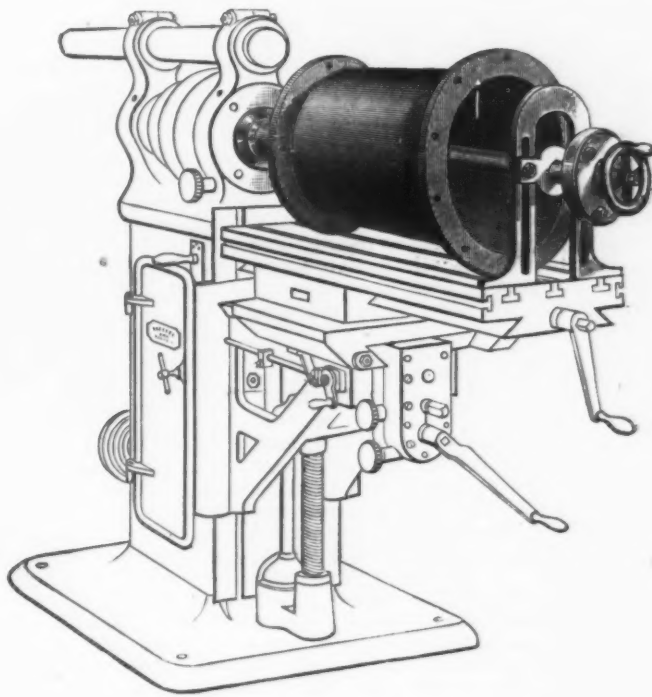


Fig. 6.

UNIVERSAL MILLING MACHINE ATTACHMENTS, BUILT BY PEDRICK & AYER.

be scarcely recognizable. They now are adapted for riveting, forging, and shaping metals. Three of the machines are to be sent to the Paris Exhibition, together with an interesting collection of samples showing the work done. Mr. Royce presented to the gentlemen present a souvenir of the occasion in the shape of a single bar composed of copper, brass, German silver and iron welded together by the electric process.

cordance with the recommendations of the New York Chamber of Commerce, and the contract for the purchase of the site now made is the conclusion of negotiations pending when Mr. Fairchild vacated his office. Nothing remains but to perfect the title and erect the necessary buildings. The site purchased is the block bounded by West, Bank, Bethune and Washington streets, convenient to the wharves of the principal steamship lines, and is twice the

site at present are tenanted by the Star Card Company, T. & R. Patterson, lumber dealers; the De la Vergne Refrigerator Machine Company, the Whiting Putty and Paint Works, W. H. Dougherty & Co.'s iron works, a box factory, a rubber-paint works and John J. Budd. The frontage on West street is 285 feet depth, on Bethune street 360, on Washington street 230 and on Bank 370, and the area is about 93,000 square feet, or over two acres. The

decision now reached must commend itself to the judgment of all merchants who have observed the tendency of the foreign commerce of the port to concentrate on the North River side of the city, midway between the upper and lower sections and at a point not far removed from the prominent business center. It now becomes of the first importance to erect a structure commensurate with the requirements, present and prospective, of the leading commercial emporium of the United States, one that shall be not only commodious but practically indestructible by fire or the lapse of time, and which shall command every facility for transacting business expeditiously and at the minimum of expense. Architectural effect is a minor consideration, but cannot be wholly ignored.

W. B. Belknap.

Few men not in public life had so wide a circle of acquaintance, and few in any station have been more sincerely mourned than William B. Belknap, whose death is announced at Louisville, Ky., February 24, in the 78th year of his age. Prominent as he has been in mercantile and manufacturing enterprise in the West and South, he was socially almost as well known in the East, whither his journeyings in search of health and necessary recreation frequently brought him in his later years.

Mr. Belknap's early life intimately associated with the first beginnings of the great iron manufacturing industry of Pittsburgh. He was of the family that gave to the world the well-known Dr. Jeremy Belknap, the historian of New Hampshire. His father, Morris B. Belknap, who as well as the son was born in Brimfield, Mass., was a man of versatile talent. While by preference devoted to science, he studied at one time law and at another time divinity at Harvard College. But more than all he was impelled by that spirit of restless activity which Washington Irving so humorously describes as characteristic of the typical Yankee. Married in 1807, he moved in the same year to the frontier at Marietta, Ohio, where he knew intimately both Aaron Burr and Blennerhassett, visiting the latter at his island home, and leaving on record his belief that the famous "Burr's Expedition" was not undertaken with any treasonable intent. From Marietta he went to Lexington, Ky., and returned to Brimfield in 1810. From Brimfield he moved again to Worcester, Mass., where the strong bent of his mind toward science and mechanics led him to engage in manufacturing. Still another move was made in 1816, when he went to Pittsburgh, Pa., where at once, without previous experience in anything of the kind, with no models before him, and without skilled assistance, he set himself to what became his life-work, the construction of furnaces and rolling mills. The first rolling mills of Pittsburgh were built under his supervision, and there still exists at least one of his structures, which with little if any alteration is running and doing good work to this very day. The so-called skilled workmen that were imported from England proved so incapable that Mr. Belknap was forced to take the tools from their hands and show them—and he showed them successfully—how to do what he himself had never seen done.

After 11 years of sound, honest work Pittsburgh was fairly started, with no small obligation to this man's genius, on the road to manufacturing wealth, and it was time for another move. He heard of the rich mineral deposits that lined the shore of the Cumberland and Tennessee rivers. He started for Nashville, where, armed with cordial letters from Andrew Jackson, whom he visited at the Hermitage, he proceeded alone and on horseback to explore the spurs of the Cumber-

land Mountains and other portions of the State. As a result of his investigation reported to the bankers Yeatman, Woods & Co., of Nashville, the latter gentlemen determined to erect furnaces and a rolling mill in Stewart County, and here the subject of our sketch, Wm. B. Belknap, was called upon at the early age of 16 to begin his long and successful business career.

His father had left his wife and six children, of whom William was the oldest, at their country home on Pine Creek, near Pittsburgh, while he was prospecting in Tennessee. William was going to school to the Rev. Jos. Stockton, in Allegheny, but doubtless he had got the most valuable part of his education at play among the driving wheels and rolls of his father's big mills, which he had watched him construct and put into operation. He was already in his early teens a sort of *pater familias*, and the younger children looked up to him as they continued to do through life. The order came to him from his distant father to select and purchase the machinery for an iron furnace, and to come to him from Pittsburgh, bringing with him machinery, household furniture, family and all. One can well believe that that must have been an extraordinary youth on whom a father could venture to impose such a formidable task. But the machinery was judiciously bought, and the lad, with his valuable freight, animate and inanimate, was soon voyaging down the Ohio. He left behind him delightful memories of his school days and of his intimate fellowship with other bright boys, like his lifelong cronies, Geo. K. Shoenberger, of Cincinnati, and John H. Shoenberger, of Pittsburgh, weighty names subsequently in the iron industry and in the development of those great cities. He kept a warm corner in his heart always for his boyhood friends, and those friendships became subsequently an important factor in his business career.

Reaching the falls of the Ohio at Louisville, where there was then no canal, the boat had to be relieved of her cargo to enable her to pass the rapids. Young Belknap saw to the unloading of his heavy machinery, to its carting through Louisville to below the falls, and finally to its loading again at Shippingport. It was a tedious job, taking two or three days before the boat was again on her way to the mouth of the Cumberland. The landing place on the Cumberland River—no town, but a ferry crossing only—was reached in the night-time, and our schoolboy delivered the family furniture and the machinery all safe and sound to his father, awaiting their arrival on the river bank. But Dr. Joseph Stockton's pupil was no schoolboy now. No university could have educated him so fast as that trip down the river. When he arrived at that river landing he was already a man, and ready to do a man's part in the world. For two years he assisted his father, disbursed the money and attended to much of the business incident to building and running several furnaces, which, including the Hillman and other leading charcoal furnaces, are still in operation and noted for the quality of their iron. He was feeling advanced and mature, we can imagine, when he attained his nineteenth birthday, and, knowing that his father would keep on all his life building furnaces and rolling mills for sheer love of it, he obtained permission to mount a horse and seek his fortune wherever it might be awaiting him.

He found it for the time being at Hickman, Ky., then called Mill's Point, on the Mississippi River, about 40 miles below Cairo—a fertile but then unwholesome section, where he made money in merchandising, but lost his health. At first in business for himself, he subsequently associated himself with two young men from Louisville, Ky., and, expanding their operations, a branch house was established

at Moscow, and still another later at Vicksburg, Miss., of both of which Mr. Belknap had charge. In a few years a snug little fortune, as was supposed, had been made for all the members of the firm, and Mr. Belknap sold out to his partners; but before a settlement could be made the fierce financial revulsion of 1838 swept over the country, and the three young men who had thought themselves passing rich were wholly bankrupt. His bankrupt debts Mr. Belknap subsequently discharged dollar for dollar, as fast as he could earn money to pay them. It is not an unmixed evil for a young business man to be roundly bankrupted early in his career. It is better to have lost and paid than never to have lost at all. Mr. Belknap's money was gone, but a valuable lesson remained, which enabled him to weather subsequent financial storms with hardly the loss of a spar. And now he must wander, like his father before him. He goes to Texas, then to St. Louis and to Cincinnati; but finally, in 1840, he settles down in Louisville, Ky., as agent of his boyhood friends, G. K. & J. H. Shoenberger, of Pittsburgh.

In 1843 he married Miss Mary Richardson, daughter of William Richardson, president of the Northern Bank of Kentucky. In 1847, having prospered in business, he bought, in conjunction with Capt. T. C. Coleman, a partly built rolling mill, which they completed and entered upon the manufacture of iron of such superior excellence as speedily built up a reputation all over the South and laid the foundation for several Louisville fortunes. His separate merchant business of iron and heavy hardware was kept up under the firm name of W. B. Belknap & Co., in which he was associated with his brother, Mr. Morris L. Belknap. The firm has since expanded into the corporation of W. B. Belknap & Co., managed by his sons and his son-in-law, and well known as one of the most important hardware houses south of the Ohio River.

His mature life has been identified with the development of Louisville. Caring nothing for public honors, he was earnestly devoted to its welfare. No new scheme for promoting it wisely could be broached, as by charitable institutions, by libraries, by manufacturing enterprises, large or small, to which he was not ready to give both his money and his time. He was active in the Sanitary Commission, the Refugee Commission and other beneficent agencies of the war period. He was never afraid of the laboring oar. His charities were constant, but quiet always and avoiding publicity. He was especially fond of intellectual companionship, and few men of distinguished merit visited Louisville without receiving invitation to his hospitable board. During the war, in which he earnestly espoused the Union side, he virtually kept open house for the brilliant throng of federal officers of whom Louisville was headquarters. The list of those entertained by him would embrace the most distinguished names that illumined the battle-fields of the Southwest, from Grant, Sherman, and Thomas down through a multitude of worthy subordinates. All over the Union are men who will long remember the gracious figure of their host—for Mr. Belknap was a man of strikingly handsome and dignified appearance, and the most courteous manners based upon innate refinement and goodness of heart. It is pleasant to think that in his old age he had all that can best console declining years, as "honor, love, observance, troops of friends."

C. P. Huntington, the railroad magnate, is credited with having bought 1,000,000 acres of land in Lower California, where he is building a railroad, and is said to contemplate a development of that section of country.

The Buffalo Exhaust Fan.

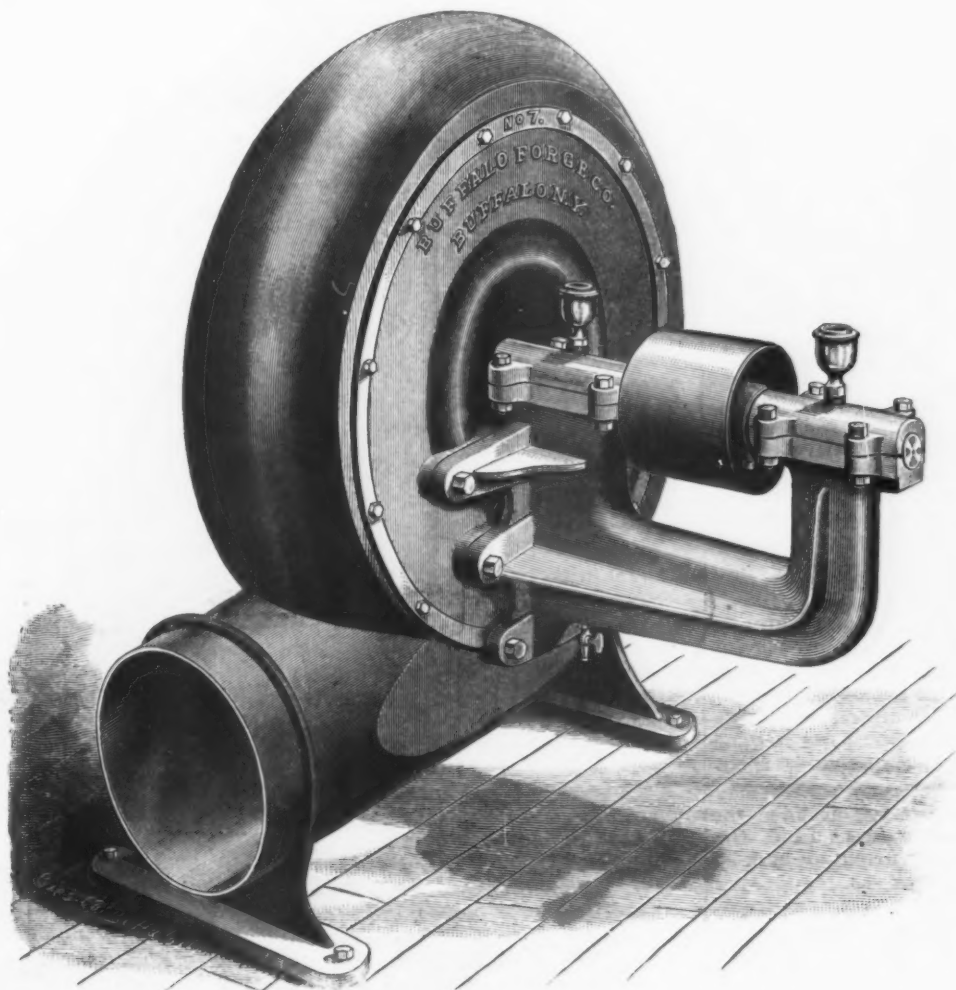
The peripheral portion of the shell or case of this fan is cast in one piece, to which the center plates are fitted, metal to metal, without the interposition of any foreign substance whatever. The Buffalo Forge Company, of Buffalo, N. Y., the makers of this fan, claim as the result of this construction that the fan is practically one piece, and that, under any service, the bearings must always be in perfect alignment with the rest of the machine. The journals are long and heavy and are supported by the arm having planed surfaces fitted accurately to the body of the fan. By a perfected system of gauges and templates it is claimed the

jectiles fired at them at a distance of 30 feet from the muzzle, but the compound armor showed the best results.

A New Brass Mill.

We have alluded in the past to the fact that a new brass mill is in course of construction at Bridgeport, Conn., by the Aluminium Brass and Bronze Company. Those identified with it are men long connected with the metal industry of the Naugatuck Valley, the president being Frederick J. Kingsbury; the treasurer, William Powe, for many years with the Ansonia Brass and Copper Company; the secretary, Frederick J. Kingsbury, Jr., and the me-

carry a pressure of 125 pounds per square inch. In immediate proximity to it is to be the 1000 horse-power compound engine, the largest yet constructed by the builders, Watts, Campbell & Co., of Newark, N. J. The main shaft of this engine drives the seven sheet trains, which are located in the main building, which is 267 x 84 feet. The wire rod train is placed in the lower right hand L, 76 x 70 feet, which also contains two heating furnaces. The main engine drives also the slitting machine and the wire-drawing benches, which are placed along one wall of the main building. The muffle-room, 120 x 84 feet, is located in the upper left hand L, the shipping-room, 51 x 60 feet, being alongside of it. The independent structure



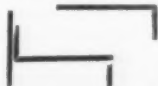
THE BUFFALO EXHAUST FAN, BUILT BY THE BUFFALO FORGE COMPANY.

different parts of the fan are so well proportioned and fitted each to the other that at the highest speed there is practically no vibration. Both bearings of the exhaust fan are on one side, leaving the inlet entirely unobstructed.

Charles A. Ashburner has just submitted to the United State Geological Survey a preliminary statement showing that the total production of coal of all kinds increased from 129,975,557 short tons in 1887 to 145,363,744 tons in 1888. The value in 1887 was \$182,556,837, which increased to \$208,129,806 in 1888.

In the trials on board the Nettle, at Portsmouth, England, to determine the relative efficiency of compound (or steel-faced iron) armor and solid steel, two samples of compound and eight of solid steel armor were tested. Two of the solid 10-inch plates withstood the Palliser pro-

chanical superintendent, Charles S. Morse, who has also extended experience in brass manufacture. Dr. Leonard Waldo is electrical engineer. The principal aim will be to produce a high grade of sheets, rods and wire, with the aid of silicon and aluminium alloys, under the Cowles patents. The plant is located on an 8-acre tract on the Housatonic Railroad and the Pequannock River, and is expected to be in operation toward the end of May or early in June. The main buildings are now completed, being of brick, with a very handsome iron roof built by the Berlin Bridge Company, of East Berlin, Conn. The buildings have the following form:



The L on the lower left, which is 58 x 64 feet, contains six boilers built by William Lowe, of the Bridgeport Boiler Works, to

shown in the sketch has the casting-room, the metal storeroom, and the cabbaging-room in an upper floor, the cabagging being the compression of scrap by hydraulic presses preliminary to its introduction into the melting pots with new stock.

Beginning at the casting house, which is 153 x 62, and contains 40 furnaces, one of the main features as a departure from the ordinary practice is that the slabs and bars cast will not be raised from the pit, but will be allowed to drop into the story below, thus avoiding a good deal of labor. They are carried directly to the rolling mill in cars, the track being on the same level.

In its rolling mill practice the new works will differ very widely from the generally accepted methods. Aluminium and silicon bronze and brass are considerably harder than the corresponding common alloys. The company propose first to adopt a combination of the brass and copper practice—that is, it is the intention to break

down hot and finish cold. Then their machinery is designed much stronger than is usual, and will be run at higher speed. It is being built by the Waterbury-Farrell Foundry and Machine Company, of Waterbury, Conn., of whose work the company speaks in strong terms, and the Farrell Foundry, of Ansonia. The rolls are being made by the A. Garrison Foundry Company, of Pittsburgh, Pa. The two heating furnaces for the hot rolling are located in the L in which the rod train is placed. The capacity of the plant fully employed is rated at about 6,000,000 pounds of sheets and rods and about 1,500,000 pounds of wire. The company are building a dock on the river, and are dredging a channel, which will enable them to handle the necessary coal readily. A well is being sunk into which river water for the condensers will be conducted.

The plant was located at Bridgeport, after mature reflection over the possible advantages offered—for instance, by the cheap fuel of the West. It was not placed in the Naugatuck Valley chiefly because of the additional cost of coal. At Bridgeport the plant is close to the great metal manufacturing points in Connecticut, and there is little trouble in drawing from the population of skilled workmen the necessary supply of labor. A departure in the direction of methodical work will be the establishment of a chemical and mechanical laboratory.

The Aluminium Brass and Bronze Company have adopted the use of Cowles alloys after thorough study of their characteristics, being convinced of their greater strength and their resistance to corrosion. A series of very interesting tests has been made with silicon bronze wire for electrical purposes. A wire 0.0632 inch in diameter, weighing 64 pounds to the mile, and a resistance of 23.8 ohms to the mile, showed a tensile strength of 262 pounds and an elongation of 2.4 per cent., and underwent from 110 to 126 twists. The principal advantage of such silicon bronze wire is that there is less trouble in handling it and that the number of poles, one of the great items of cost, is greatly reduced. It is stated that while the number of poles for hard drawn copper wire ranges between 36 and 43 per mile, the poles carrying silicon wire may be placed 1000 feet apart.

The following analyses of ores from the mines of the Bluffton (Ala.) Land, Ore and Furnace Company were made by J. H. Pratt, of Birmingham, Ala.:

	Clay Bank.	High Bluff.	Boland Bank.	Hickory Tree Bank.	Cleveland-Milliken Bank.
Ferric oxide.....	78.40	79.97	84.16	83.20	78.71
Silica and sand....	5.52	6.75	2.86	2.69	4.97
Phosphoric acid...	1.19	2.34	2.31	2.06	2.77
Water combined..	10.74	11.02	11.15	10.85	10.80
Moisture at 100° C.	0.99	0.32	0.65	0.60	0.60
Metallic iron.....	54.88	55.98	58.91	58.24	55.10
Phosphorus.....	0.52	1.02	1.01	0.90	1.21

The principal development thus far has been made at the Clay Bank.

Mr. G. L. Walker, of Plymouth Foundry Company, Plymouth, Mass., has recently returned from a two-months' trip to the Pacific Coast. Mr. Walker combined business and pleasure and enjoyed a satisfactory amount of both.

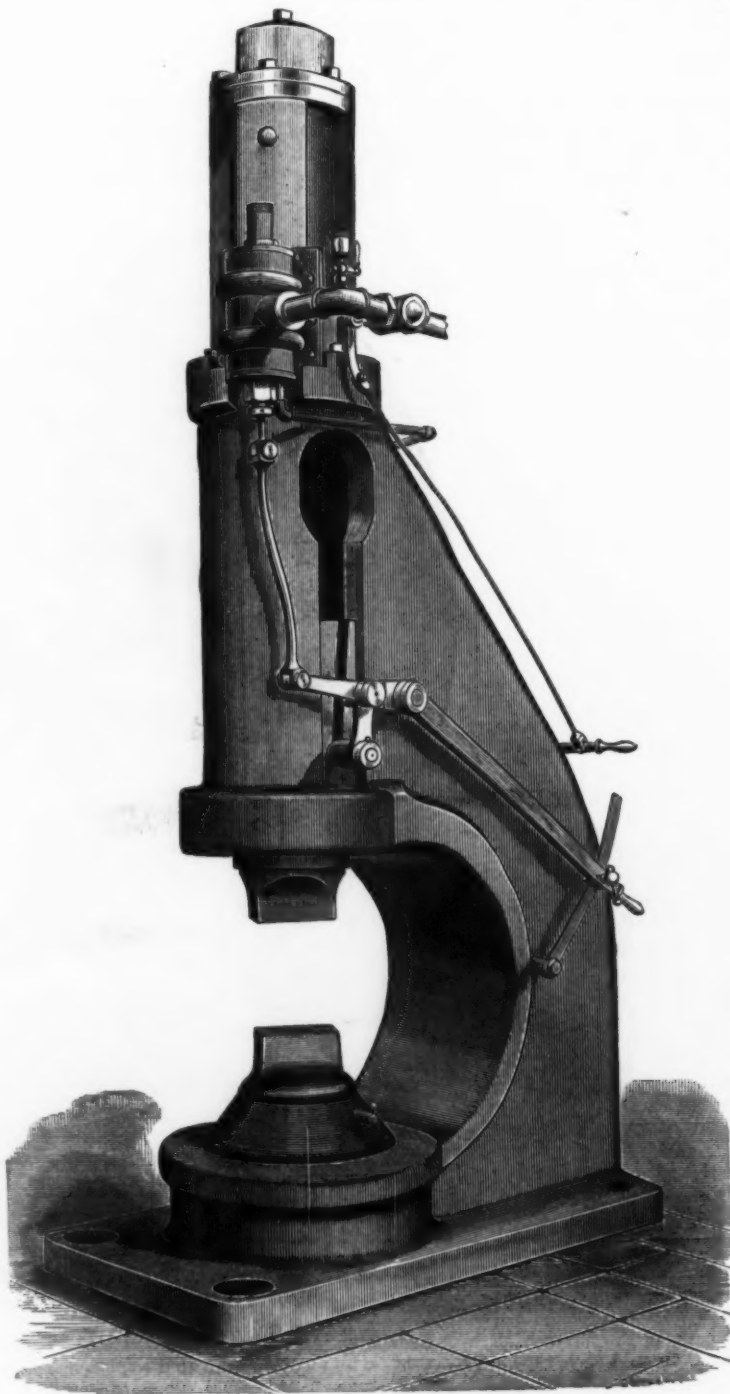
A jury at Greensburg, Pa., gave a verdict of \$4798 against Carnegie Brothers, the amount of damage done to a fruit farm by smoke caused by burning coke on lands adjacent. Judge Hunter ruled that inasmuch as the coal used for the manufacture of said coke was not mined on the premises, but shipped there from other localities, the company, he believed, was liable for any damage done the plaintiff's property.

Automatic Steam Hammer.

In the steam hammer here illustrated the frame, or housing, where the anvil passes through is bored true to receive the top of the anvil, which is turned off to fit. The advantage gained by having the ram and anvil in line will be readily seen; all that is required in making the dies for

side. The makers of this hammer, the Knoxville Car Wheel Company, of Knoxville, Tenn., in addition to the special dies can also furnish dies for making railroad coupling pins.

The Atkinson Car Spring Works, of Chicago, are in no way disconcerted at the suits recently brought against them by



GUILD'S AUTOMATIC STEAM HAMMER.

special work is to make them true to the shank of the die, when they will come exactly in line. The ordinary die can also be turned around to any angle desired. The valve is a simple piston having two packing rings. The steam-chest is lined with a brass bushing formed with a series of holes drilled to correspond with the annular recess in the steam-chest. This construction obviates the necessity of projecting the post and gives a free passage for the steam. The valve is balanced and very easy to handle, while it may be easily got at, as all its connections are on the out-

residents of the neighborhood for maintaining a nuisance. President F. M. Atkinson states that these suits have been instigated by parties having ulterior motives, which will be demonstrated in due time. The condition of the works has been investigated by the Board of Health, in accordance with the complaints made, and the officers found that fish oil was not being used for tempering, and that care was taken by the company to avoid the creation of disagreeable odors by having the tanks covered with exhaust fans drawing off the fumes. Gas furnaces are used

for heating the steel, so that but little smoke is made by the works. The hammers complained of are very light, the heaviest being but 80 pounds, so that not much jarring could be done by them. The absurdity of the charges brought against these works is shown by the fact that they are located in a district almost wholly given up to manufacturing. They are surrounded by malt houses, distilleries, tanneries, rolling mills, &c., all making more or less smoke, many yielding stenches of the most disagreeable character, and some being exceedingly noisy. The suits entered have been appealed, steps have been taken to check further prosecutions, the company's operations have not been interfered with, and the pecuniary consequences have been insignificant. This statement is due to the company in view of the sensational reports which have been published concerning them.

Locked Wire Rope.

E. G. Spilsbury, managing director of the Trenton Iron Company, Trenton, N. J., presented at the New York meeting

that they may be readily designed to meet the requirements of every particular case and that the flexibility may be increased by the method adopted in laying up the rope. The total tensile strength of the locked rope represents a higher percentage of the aggregate tensile strength of the individual wires. The weight per foot for the same size is of course greater than that of the ordinary wire rope, being about 50 per cent. more. It is pointed out, however, that the greater bearing power will allow of a smaller size of rope. The cost of the locked rope is about double that of the ordinary stranded rope, but it is claimed that increased life compensates for it. Some of the data gathered during years of use in English collieries point to this conclusion.

On the score of safety the fact is emphasized that when one wire breaks it is not loose, but being locked by its neighbors, merely tends to create an irregularity at the socket and gives timely warning of its condition. On long ropes the lessened weight through greater strength is an important consideration. In mines it lessens the dead-weight and allows of going to greater depth without heavier engines, or

cles they make the partly-finished product, carrying it, with the aid of a good deal of special machinery, to the point desired by their customers. Thus we are informed that they make the axle boxes for childrens' carriage axles by the million. They produce also twisted and plain copper lightning-rod tubes. They report that in a number of small articles the high price of copper during the past year has led to the substitution of cold-rolled steel for it, some of the brass and copper manufacturers themselves placing considerable orders for some specialties. Some of the specimens shown exhibit a capacity for undergoing torture which few familiar with steel would credit the metal with.

Company Stores in Illinois.

The following bill, directed against "company stores," has been introduced in the Illinois Legislature, and is making progress toward enactment into a law:

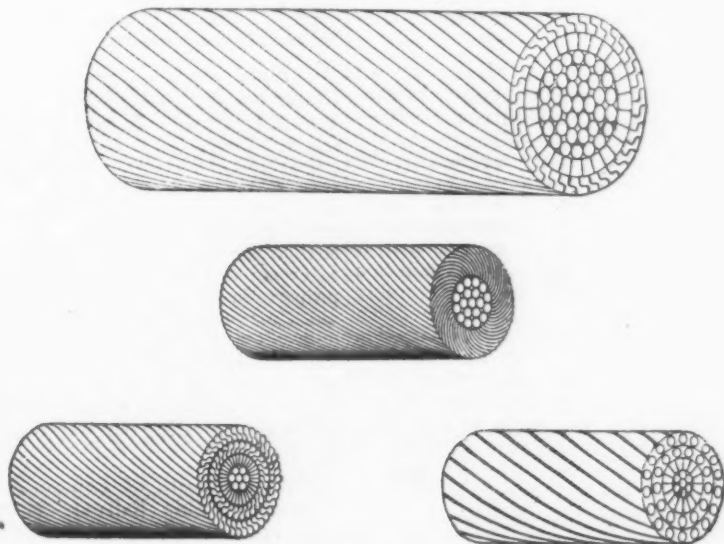
"That it shall be unlawful for any person, company, corporation or association now engaged or hereafter to be engaged in any mining or manufacturing business in this State to engage in, or be interested in, directly or indirectly, the keeping of a truck store or controlling of any store, shop or scheme for the furnishing of supplies, tools, clothing, provisions or groceries to his, its or their employees while so engaged in mining or manufacturing.

"Every person, company, corporation or association found guilty of violating Section 1 of this act, either by himself, its or their agents, servants or employees, or partners, shall be guilty of a misdemeanor for each and every day such business is done in violation of said section, and on conviction will be liable to a fine for each offense of not less than \$50 nor more than \$200, to be recovered in the name of the people for the use of the school fund, and any person having knowledge of the fact that said section has been violated may make complaint and cause summons or warrant to be issued, and if conviction follows and fine be paid such person shall be entitled to one-half the fine when collected, to be paid by order of court to such person.

"It shall be unlawful for any person, company, corporation or association, employing workmen in this State, to make deductions from the wages of his, its or their workmen, except for lawful money, check or draft actually advanced, without discount, and except such sums as may be lawfully garnished in the hands of such employer by process of a court, and except such sum as may be agreed upon between employer and employee which may be deducted for hospital or relief fund for sick or injured employees. Any deductions made from the wages of any workman in this State, except as provided in Section 3 of this act, may be recovered in any appropriate action before any court of competent jurisdiction, together with such reasonable attorneys' fees as the court in its discretion shall think proper, and no offset or counterclaim of any kind shall be allowed in such action or proceeding.

"All attempts to evade or avoid the provisions of this act by contract or otherwise shall be deemed a violation thereof, and for every violation, in addition to the civil remedy provided for in Section 4, there shall, on conviction, be a fine imposed of not less than \$50 nor more than \$200 for each offense. Nothing in this act shall be so construed as to include the business of farmers or farm laborers or servants."

Senator Farwell, of Illinois, is one of a number of capitalists, British and American, who have purchased a tract of 200,000 acres in Durango, Mexico, for stock-breeding purposes.



SPECIMENS OF LOCKED WIRE ROPE.

of the American Institute of Mining Engineers a paper on the locked wire rope invented by an English firm—George Elliott & Co.—and introduced into this country by the Trenton Iron Company. In ordinary wire rope, flexibility can only be secured by making the number of wires to the strand large and by choosing a small gauge of wire. The result is that the wear of the rope is limited practically to less than one-half of the diameter of the individual wire. The outside wires—those which come into contact with the wearing surfaces—are those which determine its life. A serious source of wear is that the rope running over a sheave is apt to cause the formation on its face of diagonal grooves. When the rope does not happen to raise up to match these grooves, it slips into them, causing additional abrasion. In ordinary ropes, too, a broken wire in the strand is apt to curl up. With cable traction rope, there is danger that it clogs the grip of the cable rods.

The Elliott locked rope differs in its construction from the ordinary stranded rope in that it is composed of wires drawn to special section, as shown in the accompanying engravings, the section being such that the individual wires are locked by their neighbors. Our engravings indicate a few of the many combinations possible under this system. It will be noted

results in a saving of power. Another point of consequence in some mining operations is that there is no tendency to twist in the shafts. Until now the ends of the locked rope have been united by brazing, the ordinary methods of splicing being of course out of the question. It is the intention of the Trenton Iron Company to use electric welding, however. Some tests made with that process have given very encouraging results.

The Wilmot & Hobbs Mfg. Company, of Bridgeport, Conn., manufacturers of cold-rolled steel, have more than doubled their capacity during the past two years. The bulk of their product is steel in coils or strips, a form particularly suitable for automatic machinery in subsequent operations. They produce this steel in the range of No. 5 and 6 gauge, down to Nos. 33 and 34, the maximum width being 8 inches. The steel is used for a wide range of articles, among them keys, sewing-machine attachments, parts of clock movements and locks. They produce metal for penholder tips, stove trimmings, partly finished blanks for the watch-cases of anti-magnetic shields, steel, electric, toy and sleigh bells, castor tubes, bicycle pedal tubes, music-stand tubes, butted or lock-seamed tubes, &c. In all these arti-

THE WEEK.

St. Paul newspapers expatiate upon the advantages offered by that city as a manufacturing center. They are apprehensive that Minneapolis and Duluth may attract industries more strongly, especially as the former has decided to raise \$400,000 for the purpose of establishing a gas and water pipe manufactory in competition with Louisville, Cincinnati and St. Louis. The *Dispatch* says: "We ought to roll our own construction, merchant, sheet and plate irons, light rail sections, make our own chains and nails, supply all our neighbors with pressed and glazed brick and tiles, have a fair share of the railroad car making profits, build engines, ship tow-ropes and twines all over the nation made from wild weeds, grind our natural ochers into paint, secure the supply of tin from the Black Hills and sell the millionaire packers their tin plates, make paper from Mississippi rushes, and spin linen from Dakota golden rod and sunflowers. These are all possibilities—strange as it may seem—which St. Paul men will do well to consider."

The steamship *City* of New York is fulfilling the prediction of her builders, now that her machinery is running more smoothly. She left Queenstown March 7, and arrived at the bar at 3.30 a.m., 14th inst., beating her best previous record. Her time was 6 days, 14 hours and 7 minutes.

The Chilians, after running a line of steamships for several years between Valparaiso and Panama, are now practically independent of English influence on that coast, so far as concerns the foreign trade. What is known as the South American Steamship Company have a fleet of English-built steamers, all flying the Chilean ensign, with two more in process of construction, and have recently acquired certain exclusive rights from the Government, together with a subsidy that will amount to between \$100,000 and \$150,000 a year, in consideration of which the company are to keep up a regular fortnightly service between Valparaiso and Panama without transshipment of passengers or freight. This will insure a regular line of transportation between the United States and the countries of South America, in connection with the Pacific Mail Steamship Company and the Panama Railway; and since the new company have materially reduced the rates of freight and passage on their route, and are catering especially for the American trade, there is every reason to expect a present development of the commerce between the countries.

The Anchor line of steamers has purchased the Kelsey property in Brooklyn for \$510,000. The property includes three piers and slips, between 500 and 600 feet of water front and 4 or 5 acres of ground, a grain elevator with 750,000 bushels capacity, and several general storage warehouses. Extensive improvements will be made.

A formidable submarine ram has been invented by William R. Cavett, foreman of the Porter Machine Company, in Pittsburgh. The boat will be flush with the water-line, and will have a turtle-shaped back, covered with heavy steel plates. In the forward part of the vessel will be a heavy cylinder, similar to those used on engines. It will be about 15 feet long and will contain a piston-rod 12 or 15 inches in diameter. This piston will extend through the bow of the boat and will be the ram proper. It will be propelled by a force of steam amounting to from 50 to 150 tons, sufficient to pierce the side of the heaviest ironclad at one blow. The business end of the ram will be made cup-shaped, so that the sharp edges will take hold anywhere they happen to strike. Mr.

Cavett promises a speed of 20 to 22 knots an hour. He says that he has computed the striking force of the piston, and estimates that, with a 60-ton force, it will knock a plate from the heaviest man-of-war afloat. Only six men will be needed on board the boat, and the only vulnerable place on the craft will be a small glass-covered aperture about a foot square for the wheelman. So small and compact will be the wicked little vessel that it can be carried on board a man-of-war and can be used in encounters at sea as well as for harbor defense.

The commissioners nominated for the Samoan conference at Berlin are John A. Kasson, William Walter Phelps and George H. Bates. Mr. Bates is about 40 years of age, a Democrat and a warm friend of ex-Secretary Bayard's. He is a son of the ex-Chancellor of Delaware and a lawyer of high standing in Wilmington. Mr. Bates was appointed by Secretary Bayard as special commissioner to investigate our Samoan relations, and made a long and exhaustive report to the Department on December 10, 1886. William Walter Phelps and John A. Kasson have acquired an intimate knowledge of diplomacy through service as United States Ministers in Europe, Mr. Phelps having been Minister to Austria in 1881, and Mr. Kasson Minister to Austria in 1877 and to Germany in 1884.

Mexican railroads are shown by an official report to have been costly in construction, owing to engineering difficulties, but they have contributed greatly to the prosperity of the country by making its resources available and opening new districts for colonization. The oldest line in Mexico, the Mexican Railway, connects the capital city with Vera Cruz, and is some 300 miles in length, and is laid in a manner that would compare favorably with any railroad in England for finish and solidity of construction. The line with greatest mileage is the Mexican National Railway, extending about 2000 miles, but its usefulness is greatly impaired by the narrow gauge which it has adopted, thus putting it practically out of touch with other systems. The next in importance is the Mexican Central Railway, connecting Paso del Norte with Mexico, with a main line of 1223 miles in length. Like the other lines, it is well constructed. The other railways are the Mexican International Railway, open from El Paso to Torreon, a distance of 517 miles, but with easier gradients than the lines previously named; the Inter-Oceanic Railway, intended to connect the Atlantic and Pacific through the capital, of which 240 miles were open when the report was compiled, and the Mexican Southern Railway, with small progress made up to the present time.

Harry Fraser Worthington died in this city last week, aged 44. He was the eldest son of the late Henry R. Worthington, inventor of the Worthington pumps. He had been in business, and 12 years ago was a member of the New Jersey Legislature, but for several years he had been an invalid.

An extensive purchase of lands on the Jersey flats, about a mile distant from the Statue of Liberty, has just been completed by the Pennsylvania Railroad Company for dock and wharf purposes. This will give the company a shore line of 3660 feet. The plans for improvement comprise a wall at the exterior line, open for the passage of ships to a basin within. The openings will be at a dozen points, the sections to be connected by trestlework with warehouses and depots on the solid filling. By this means a vast system of basins, piers and connecting roads will be formed, with facilities for commerce and passenger traffic. The railroad company will begin

filling in with rock and refuse. That work alone will take several years, and the estimated cost is \$9,000,000. The area to be given over to commerce is larger than that of the entire city of Bayonne. In addition to the railroad taking its freight business to the new terminus, it is said that the steamship lines now controlled by the company will have their piers there, and that two new lines to Europe will be established.

Buffalo papers say there is good authority for stating that the Canadian Pacific Railroad will be extended to that city from Toronto, by way of Niagara Falls, and that the company will probably build an independent bridge.

The New York Chamber of Commerce formally approved resolutions supporting the plan proposed by the Dock Commissioners "to afford a reasonable and practical mode of giving a certain, positive, additional accommodation" to the shipping interests of New York "without any injury to the channels or to existing conditions and facilities."

A water-power company at Buffalo wishes to obtain a charter with the object of creating a great water power by tunneling through to the bottom of the Niagara gorge, and by means of an open ditch supplying manufacturing establishments between Buffalo and Suspension Bridge.

A rapid transit bill, prepared by Mayor Grant, has been introduced in the New York Legislature. Its aim is to provide a speedy, durable and safe method of transportation between the upper and lower parts of the city, and to attain this end as speedily as possible after the plan has had popular approval. To sum up, the bill enables the city, through its own agents, to create the franchise, makes it public property in the hands of the city, and provides for private agencies in its operation only after the city has approved of the road which is to be built and operated, its routes, plans for its construction, and the terms and conditions of the charter under which the operating corporation is to derive its power.

Since the death of Captain Eads the Tehuantepec Ship Railway Company has been under the direction of Col. James B. Andrews, the associate of Eads in his great works at the South Pass Jetties and the St. Louis Bridge. Its recent president was Secretary Windom, the present Secretary of the Treasury, who was elected soon after the company's organization. The New Orleans *Times-Democrat* learns through Capt. E. L. Corthell that the Mexican Government has made another proposition to hasten progress on the work. The Government promises to guarantee 5 per cent. interest on the \$60,000,000 worth of bonds, the sum considered requisite for the construction of the railway, in case the company's earnings should not be as much as 5 per cent.; or, if this interest falls below \$3,000,000 a year, the Mexican Government proposes and promises to make up the entire amount of that deficit to the stockholders.

The attempt to restore the 3-mill tax on manufacturing corporations in Pennsylvania was defeated on a test vote in the Legislature.

John Huntington, of the firm of McIntosh, Huntington & Co., of Cleveland, Ohio, who was formerly extensively engaged in the roofing business, has given the munificent sum of \$200,000 to institutions in that city. He made a number of valuable inventions and obtained patents for improvements in furnaces, methods of refining and machinery for manufacturing barrels. When the Standard Oil Company was formed by the combination of a number of companies, Mr. Huntington

and his inventions were taken into the new organization. It was here that he laid the foundation for his present fortune. He is still interested in the Standard, has large vessel interests, is the vice president of the Cleveland Stone Company, and has other property which yields him a handsome revenue.

The annual report of the State Superintendent of the Banking Department relative to savings banks and trust companies, just transmitted to the Legislature, contains some interesting facts in relation to the savings of the people. The report only includes State institutions. The increase in the number of depositors and the amount of deposits since 1860 has been surprising. Then New York had 273,697 depositors and only \$58,178,160 due depositors, an average amount of \$208.91 for each account. Now there are 1,362,852 depositors, with a total of \$523,677,515 due depositors, and an average amount of \$384.25 for each account. The population of the State, according to the last census, was 5,082,871, and allowing for the increase, it is safe to say that one-quarter of the entire population has a bank account in these State banks. One in four of the population

Speaker Graves has introduced a resolution in the Minnesota Legislature declaring that the United States should compete for the commerce of the world; that money should be appropriated from the Federal Treasury for the construction and operation of steamship lines from New York to European ports and to South American ports; also from San Francisco and Tacoma to Japan and Australia. As England has already entered into engagements with the Canadian Pacific Railroad Company for the maintenance of a steamship line to Japan and Australia and has already established steamship communication with all commercial countries, the action here advised comes rather late, but it is a wholesome sign when the West begins to wake up to the necessity of extending our foreign markets.

The elevated railroads in this city, which paid nothing for the right of way before obtaining their charters, are now doing something in that direction. Last week the largest judgment yet awarded in any single action against the Manhattan Company was given by Judge Ingraham in the Supreme Court in favor of the Sixth Avenue Surface Company. It appeared in evidence that, with one or two exceptions, there has not really been a first-class apartment house erected on Sixth avenue from Forty-second to Fifty-ninth street since the building of the elevated railroad, and the plaintiff's property had suffered more than any other. The awards aggregate \$95,000. The usual injunction accompanies the decision, forbidding the operation of the road after 30 days unless the judgment is satisfied.

Cordage manufacturers in New York City deny that a "twine corner" is in contemplation, but contend that binder twine this year may be 25 per cent. higher than last year, owing to the demand outrunning the supply and the inability of manufacturers to control the raw material. The effect on the farmer is to compel him to pay about \$6 more this year for say 150 pounds of twine, enough to bind 100 acres of grain. A dispatch from Fargo, Dak., states that it is proposed to establish a large twine factory there and manufacture flax fiber into twine. Last year there were 329,288 acres planted to flax in the Territory.

The appointment of Abraham D. Hazen to be Third Assistant Postmaster-General gives much satisfaction. To Mr. Hazen, while formerly in that position, is due the credit for the extension of the registry

system to parcels of merchandise, which has proved so great a convenience to the public during the past 11 years, and has brought about a substantial reduction of rates by the express companies.

A freight contract between the Northwestern Transportation Company, better known as the Anchor line, on Lake Erie, and the Baltimore and Ohio Railroad will almost double the lake traffic at Erie during the coming season. Three iron steamers have been added to the fleet.

The lake shipyards are all busy, encouraged by the profitable rates of freight realized by vessels in the lake traffic. At Detroit the Dry Dock Company alone are employing nearly 1600 men, and have in course of construction nearly a dozen steamers, valued at \$2,000,000. The steel steamer City of Detroit is nearing completion. Secretary McVittie, of the Dry Dock Company, says the aggregate tonnage which will be placed on the lakes this season will approximate 100,000 tons.

Collector Magone, of this port, expresses himself strongly in reference to contract labor, claiming that the present law designed to exclude immigrants under previous contracts is inoperative, that the criminal classes, convicts and anarchists have a better chance of landing without objection than an honest man. He would have every immigrant medically examined to determine his sanity, and exclude all who have been convicted of a crime.

The annual rush to Europe by the steamship lines from New York promises to be larger this season than ever before, mainly on account of the attractions of the Paris exhibition. The active season will begin earlier than usual, as nearly all the berth-rooms on the various steamers from about the middle of April to the middle of July have already been engaged. Some of the lines will run as many as three steamships a week, calling into the service a considerable fleet of extra steamers. On the line to Antwerp a large number are booking through to Paris, as the run from Antwerp is only six and a half hours.

The increasing indebtedness of Canada in no way dampens the ardor of those who advocate grand schemes of internal improvement. Not long ago a scheme for a ship railway somewhere down in the Maritime Provinces was approved, regardless of cost, and the Chamber of Commerce at Toronto have just adopted a report favoring the construction of a ship railway from Georgian Bay to that city, at a cost of \$12,000,000.

The Paterson, N. J., silk manufacturers are rushed with orders. Broad goods are increasing in favor.

The coastwise transportation business this season has been very good, both by the land and water routes. The orange trade, now drawing to a close, was heavy beyond precedent. Strawberries are backward.

Quantities of structural iron are being distributed on the line of the Pennsylvania Railroad in Jersey City for the elevation of the tracks.

The Quaker City cold storage warehouse about to be erected in Philadelphia, it is claimed, will be the largest of its kind in the United States. The interiors of the brick walls are to be lined with three thicknesses of wood, between which are to be several thicknesses of the "Kelly" insulating cell paper. Each floor will be divided into 15 compartments. All of the windows in the compartments have four or five glazed sashes in each, and there will be five elevators, each provided with an air lock.

There was but one proposal received by the Navy Department for supplying the machinery of the armored cruiser Maine,

now building at the New York Navy Yard. This bid was made by the Quintard Iron Company, of New York (N. F. Palmer, Jr., & Co.), and amounted to \$735,000.

Business men in Philadelphia are restive under the steady decline for several years past of the commerce at that port. The grain export trade of Philadelphia has declined from nearly 31,000,000 bushels in 1879 to 1,809,215 bushels in 1888. The petroleum export of Philadelphia reached its highest point in 1887—3,227,422 barrels—which was nearly one-half of the amount exported from New York for that year. But it declined in 1888 to 2,657,743 barrels. In other respects the loss of trade with foreign ports is too apparent to be concealed. Several commercial bodies are attempting to devise a remedy. A committee of the Board of Trade is pressing its inquiries in every direction. *Per contra*, it is said that while there has been a great falling off of late in the exports of two great staples—grain and petroleum—this loss has more than been made good by increased imports, so that, upon the whole, the commerce of the port is on the upward grade.

The new Secretary of the Navy, Gen. Benj. F. Tracy, in a speech delivered at a club dinner in Brooklyn on Saturday night, spoke of the necessity for continued naval enlargement. He said: "What has been transpiring on the Isthmus, in South America and in the Pacific has impressed upon the American people the fact that we need and must have a navy—a navy that can cope with any nation in the world—not to make war, but that we may be able to maintain peace with dignity and honor. That work was begun some six years ago, and the foundations have been laid by my predecessors broad and deep. Fortunate shall I be if I can succeed in erecting the superstructure on the foundations they have laid. Although we are late in commencing the construction of a navy, such has been the vast improvement in the building of armored war ships in the last few years that we have lost nothing by delay. There has been more progress in this direction in the last six years than in the 25 years preceding." As for himself, in the administration of the navy he would indulge in no rash promises as to what he hoped to accomplish.

Agriculture and manufactures in South Carolina are in a prosperous condition, constantly attracting a larger capital. The Charleston *Courier and News* is authority for the statement that while in 1877 the value of the principal crops was \$28,186,080, in 1885 the value had risen to \$41,031,195, an increase approaching \$13,000,000, and in 1888 the aggregate reached \$44,135,000. While in agriculture the total value of products now falls materially below that of 1860, there is in manufactures a large and significant gain over the ante-war period. The capital now employed in all manufactures is three times that of 1860, and the value of the products two and a half times what it was then. In 1880 manufactures contributed 23 per cent. of the value of the entire industrial product of the State; in 1887 the ratio derived from that source was 31½ per cent., and doubt is expressed whether any other State in the Union can show an increase equal to this. The rapid growth of cotton manufactures seems to indicate that this form of industry is particularly adapted to the natural conditions of the State. The number of spindles has increased from 35,000 in 1870 to 82,334 in 1880, and for the year just expired it is officially estimated at 250,000 spindles. The value of the products of the forests is increasing still more rapidly.

MANUFACTURING.

Iron and Steel.

On Monday, the 18th inst., a 10 per cent. reduction in the wages of the employees of the Catasaqua Mfg. Company, of Catasaqua, Pa., went into effect. The reduction affected about 600 hands.

Capitalists of Youngstown, Ohio, have about concluded arrangements for the building of an extensive bridge works in the suburbs of Hazleton, on or near the site of the Morse Bridge Works, which were destroyed by fire. The organization will be known as the Youngstown Bridge Company, with a capital stock of \$100,000, all of which has been subscribed. Application has been made for a charter, the incorporators being B. F. Boyd, Hamilton Harris, Robert Hunter, L. E. Cochran and John Neilson. The company expect to be in operation in three months and employ 100 men.

S. S. Hartranft, a son of ex-Governor Hartranft, of Pennsylvania, has been placed in charge of the blast furnaces of Brown, Bonnell & Co., at Youngstown, Ohio. Mr. Hartranft was recently furnace manager for the Brier Hill Iron and Coal Company, also at Youngstown.

The small Russia sheet-iron works, built near Freeport, Armstrong County, Pa., in 1887, are for sale. The works were intended to produce Russia sheet iron from purchased sheets. The principal piece of machinery is a Morgan steam hammer.

The Iowa Barb Wire Company, of Al-lentown, Pa., who now employ 250 hands, are about to build a Garrett mill for rolling rods from 4-inch steel billets. The new mill will be 160 x 210 feet, with a capacity to roll from 30,000 to 40,000 tons of rods per year.

The South Birmingham Coal and Coke Company have been organized at Salem, Roanoke County, Va., with a capital of \$1,000,000. Charles G. Emery, of New York, is one of the directors. The company will erect 100 coke ovens and a furnace at once.

It is reported that the Centre Iron Company, of Bellefonte, Pa., have increased their capital stock to \$150,000 and are considering the advisability of adding a rolling mill to the present plant.

A company is being organized in Philadelphia to operate the Gem Furnace, at Mines Station, on the Shenandoah Valley Railroad, which was sold out by the sheriff a few weeks ago. It was bought in by D. W. Flicker, superintendent of the railroad company, acting for Philadelphia capitalists, who are now forming the company. Applications have been received already for all the stock that will be issued.

The two stacks of the Brier Hill Iron and Coal Company, at Youngstown, Ohio, are in blast, with good prospects of continuing in that condition.

The new steel rail plant of the Allegheny Bessemer Steel Company, at Duquesne, Pa., is now in successful operation. The company have adopted the process of rolling rails without reheating between the blowing-mill and the finishing rolls. The rail is taken out of the pit, taken to the blowing-mill, and from that on to the finishing rolls without being reheated. It is stated that the company have sufficient orders on their books to keep their plant in constant operation for three months.

The failure was announced last week of the Lewisburg Nail Works, at Lewisburg, Pa. The company were organized about three years ago as a stock company, but about a year ago were reorganized as an incorporated company with a capital stock

of \$50,000. John F. Duncan is the president and Truman H. Purdy, of Sunbury, treasurer. The company also ran a store in connection with the works and employed 100 hands. The past year they have lost between \$5000 and \$10,000 in bad debts, and the failure of the Reading Iron Works, one of their largest debtors, was the immediate cause of the failure. On the afternoon of the 12th inst. the sheriff levied on all the property of the works on executions issued on judgments confessed on the company's paper, amounting to \$32,000. Most of the indorsers are the directors of the company, and they took this step to save themselves as far as possible. There is also a mortgage of \$35,000 on the plant. The works were shut down. It is probable that the affairs of the old concern will be wound up and that a new company will be formed.

It is reported that Irondale Furnace, Preston County, W. Va., will blow out about April 1, and will remain closed for an indefinite period. The cause is said to be a want of ore, the new mines opened by the company having proved unsatisfactory.

The nail factory of P. L. Kimberly & Co., Limited, at Sharon, Pa., which has been idle for the past three months, was put in operation on Monday, the 11th inst. The factory contains 40 nail machines.

Some extensive improvements will soon be commenced at the Edgar Thomson Steel Works, of Carnegie Brothers & Co., Limited, at Braddock, Pa. A new 10-ton converter will be put in, in addition to those already in use. A telegraph machine will be put up to transfer the ingots from the converting department to the blooming mill. Several other new devices will be introduced, which will permit of considerable saving in skilled labor. New labor-saving machinery of the latest pattern will be placed in the blooming mill, which will greatly increase the capacity of the works. A saw that will cut three rails per minute will be added. The entire plant will be overhauled, and wherever improvements can be made it is the intention of the firm to make them.

The rolling mill of the Kittanning Iron Company, Limited, of Kittanning, Pa., which has been idle for about two months, resumed operations on Monday, the 18th inst. Muck iron is the principal product of the plant, the greater part of which is shipped to Pittsburgh.

The entire plant of the Bellefonte Iron and Nail Company, Limited, at Bellefonte, Pa., resumed operations in full on Monday, the 18th inst., after an idleness in the various departments ranging from one to three weeks.

J. B. Carr & Co., of Troy, N. Y., are making two suits of 2½-inch chain, 230 fathoms each, for two of the largest ships ever built at Bath, Me. These chains are made in two shots for each vessel—i. e., 100 fathoms and 120 fathoms each, thereby doing away with any shackle except the anchor shackle. The 100 fathom shot weighs 30,000 pounds and the 120 shot 38,000 pounds. The 100 fathom is B. B. and the 120 fathom shot is B. B. B. chain.

The Moran Bolt and Nut Works, in St. Louis, were destroyed by fire on the 13th inst. The stock was valued at \$30,000 and was totally destroyed. The machinery was valued at \$25,000 and will be damaged to the extent of \$20,000. Mr. Moran places the damages to the buildings at \$10,000. There was no fire about the place, and how the flames so completely originated is mysterious. Fifty hands were employed in all, and 30 machines were used.

Robert Bentley, general manager of the Ohio Iron and Steel Company, at Lowellville, Ohio, furnishes the following com-

parative analyses of some well-known brands of imported Scotch and the No. 1 Ohio Scotch foundry iron:

	No. 1 Ohio Scotch.	Coltness.	Imported Scotch Glengarnock.
Vetallie iron.....	91.52	90.26	90.70
Silicon.....	3.12	3.39	2.83
Manganese.....	1.41	1.77	2.13
Graphitic carbon.....	3.24	3.27	2.68
Combined carbon.....	0.06	0.60	0.85
Phosphorus.....	0.46	0.44	0.54
Sulphur.....	0.02	0.04	0.04

It is reported that the Pottstown Iron Company, of Pottstown, Pa., have decided to have their blast furnace rebuilt this spring and that the contract has already been given out. The contract consists of four hot stoves 19 feet in diameter and 65 feet high, blast-pipe, receivers, and a stack 14 feet in diameter by 154 feet high.

The New Castle Wire Nail Company, of New Castle, Pa., will commence the erection of an extensive rod mill during the present month. It will be built adjacent to the nail factory. An order for a 2300 horse-power engine has been placed with the Southwark Foundry and Machine Company, of Philadelphia, while the A. Garrison Foundry Company, of Pittsburgh, have been given the contract for four trains of rolls.

Machinery.

The Ranken & Fritsch Foundry and Machine Company, of St. Louis, have recently secured a contract for an entire outfit of machinery for a new plate glass works to be built in Pennsylvania. The contract is a large one, and will require from 25 to 30 cars for its shipment.

Among the recent sales made by A. B. Bowman, of St. Louis, dealer in machinery and machinists' tools, are: One large engine to operate an electric light plant at Portia, Ark.; one to run a coal screen at Josslin, Mo.; one to Eureka Springs, Ark., and one to Mexico to be used in a large flour mill. Three large Vulcan hammers were sold in St. Louis, and a complete machine shop outfit at Topeka, Kan., consisting of lathes, planers, engines and boiler, drill press and small tools for machine and blacksmith shop. A heavy order was also placed with Mr. Bowman by the Missouri Pacific Railroad.

Curtis & Curtis, of Bridgeport, Conn., will have three pipe-threading machines at the Paris Exposition; one working right and left from ½ to 2 inches, another 2½ to 4 inches, and the third 4 to 6 inches. These machines will be employed on the piping for the American section and will afterward form a part of the exhibit.

The Universal Radial Drill Company, Cincinnati, Ohio, are distributing to their friends in the trade a monthly calendar sheet directing attention to their manufactures. The March calendar, which is before us, presents an engraving of their radial drill Nos. 2, 1 and 0, while the border is embellished with a picture of the old-time Egyptian drill operated by a bowstring. On the back of the card is a list of the tools they make and a large illustration of their works.

A. L. Ide & Son have received a 10-year contract for lighting the streets of Springfield, Ill., with arc lights of 2000 candle-power, at \$137 per year for each light. In connection with this contract they have agreed to furnish incandescent lights for commercial use at a price not to exceed the cost of gas of equal illuminating power at \$1.50 per 1000 feet. Also to furnish current for electric motors from ½ to 10 horse-power within 2000 feet of their station at a cost not to exceed \$100 per year for each horse-power for ten hours' use per day. They will erect a new station of sufficient size to enable them to operate the street railways, of which Mr. Ide is president, by electricity. The same firm

have also received an order from the Union Iron Works, of San Francisco, to deliver within three weeks two Ide engines of 150 horse-power each and one of 100 horse-power. They have received orders for 10 engines in the last two weeks, all to be delivered within 30 days, which necessitates running their works nights. Their new works are in full operation, and are turning out from two to three engines per week.

A battery of boilers exploded at the West Point Boiler Works, in Pittsburgh, last Thursday, causing the death of five men and completely wrecking the building.

The Pittsburgh Locomotive Works during the past year have turned out 95 new locomotives and repaired 14. It is the intention of the firm to gradually increase the output to about 250 engines a year. Each year finds a new building added to the already large works in Allegheny, and a member of the firm remarks that during the coming year several more will be added.

A company has been organized at Chicago under the name of the North-Western Street Railway Gas Motor Company, to manufacture street car motors and motors for manufacturing and domestic purposes and for furnishing propelling power. The capital is \$5,000,000, and the incorporators are Francis A. Bates, Edward T. Getchell, and Jefferson Hodgkins.

Midgley & Emerson, of Beaver Falls, Pa., manufacturers of wire belting, have the contract to furnish the main belt to run the machinery for the American exhibit at the Paris Exposition to be held during the coming summer. It will be 20 inches wide and 60 feet long. It will be shipped to Paris in the course of a few weeks.

We have received from E. P. Allis & Co., of Milwaukee, an illustrated catalogue of sawmill machinery made by them. This includes machinery embodying the latest improvements made by the firm, and also comprises a description of all the machines used in the modern sawmill.

The New York Belting and Packing Company have secured as their Southeastern agents the Atlanta Rubber Company, of Atlanta, Ga. This firm will carry a complete assortment of the New York Belting and Packing Company's vulcanized goods, from which an order can be filled without delay—a fact of interest to every one handling mechanical rubber goods in that section of the country.

The business of F. Lunkenheimer, known as the Cincinnati Brass Works, manufacturer of general brasswork and lubricators, carried on for the last 26 years, has been incorporated, and will be continued under the style of the Lunkenheimer Brass Mfg. Company, of Cincinnati, Ohio. The capital stock is \$250,000, all paid in. Fred. Lunkenheimer is president and manager, and Edmund Lunkenheimer is secretary and treasurer.

The Long & Jervis Foundry and Machine Company have removed from Decatur to Florence, Ala. Contracts have been made for three buildings, the machine shop being 50 x 100 feet; foundry, 50 x 90 feet; blacksmith shop, 30 x 50 feet. The capital of the company is \$25,000. A specialty will be made of architectural iron work and machinery of various kinds.

The following officers for the ensuing year were elected by the Standard Car Heating and Ventilating Company, of Pittsburgh, last week: Geo. Westinghouse, president; C. H. Jackson, vice-president and assistant treasurer; Robert Pitcairn, treasurer; A. T. Rowan, secre-

tary; Elmer L. White, assistant secretary, and H. H. Westinghouse and John Caldwell are the other directors.

An iron and brass foundry will shortly be established at Apollo, Pa. Casper Kettering is at the head of the new enterprise. At present facilities will be put in for making 6 and 8 ton castings. Two 10-ton and one smaller steam cranes will be put up at once; also two cupolas of from five to eight tons capacity.

The annual meeting of the stockholders of the Union Switch and Signal Company, of Pittsburgh, was held last week. The report of President George Westinghouse was read. It showed the earnings of the company for the year to be \$678,226.33. The expenses were \$561,481.62.

Hardware.

Ludlow-Saylor Wire Company, St. Louis, Mo., manufacturers of and dealers in wire, wire goods and art metal work in iron, brass, electro-bronze, &c., report a largely increased trade during the past two months. They have recently fitted up the office of Laconia Mfg. Company, Biddeford, Me., and have also taken a large order for copper screening from St. Louis Water Works.

The New Process Twist Drill Company, Taunton, Mass., formerly doing business under the laws of the State of Maine, has been reorganized under the laws of Massachusetts, with the following officers: B. L. Dwinell, president; P. H. Corr, Treasurer; A. L. Lincoln, agent; W. F. Kennedy, clerk; J. E. Pope, superintendent. New machinery has been added and the capacity of the factory greatly increased, notwithstanding which they are running overtime on orders.

Anthony Wayne Mfg. Company, Fort Wayne, Ind., write us that their superintendent, Mr. Wichman, during one week last month sold over 1600 of their washing machines.

The works of the Nimick & Brittan Mfg. Company, of Pittsburgh, manufacturers of builders' hardware, have been idle for several weeks on account of the refusal of the employees to accept a reduction of 10 per cent. in wages tendered by the firm some time ago. It is expected that the trouble will be amicably arranged during the present week and that the works will again resume operations. The firm gives employment to about 250 men and boys.

Clement Mfg. Company, Northampton, Mass., manufacture both solid and hollow-handle cutlery in many styles, selling their product to silver-platers, who plate the goods and put them on the market. Their works are capable of producing 400 dozen per day.

In our issue of last week we made mention of the fact that the Wheeling Hinge Company, of Wheeling, W. Va., had made a reduction of 10 per cent. in the wages of their employees, and that a number of the employees had refused to accept the same. We are since advised that the men have accepted the reduction and returned to work. The entire plant is now being operated to its full capacity.

When the 50 new wire-nail machines now being constructed for the wire-nail factory of Carnegie, Phipps & Co., Limited, at Beaver Falls, Pa., are placed in position the capacity of the factory will be increased from 1300 to 2800 kegs of wire nails every 24 hours.

The Three Cornered Wire Nail Company, of Pittsburgh, who have been in process of organization for some months, are almost ready to begin the manufacture of nails. The company have recently secured the lease of the Nellis Agricultural Works, at the corner of Allegheny avenue and Re-

becca street, Allegheny City, Pa., and are now engaged in fitting up the works with the necessary machinery. The plant will be equipped with 42 Taylor wire nail machines, the invention of William Taylor, who is the general superintendent of the Three Cornered Wire Nail Company. The company will draw their own wire by a new process also invented by William Taylor, for which he has been granted patents. The company will manufacture all sizes of wire nails and expect to secure their share of the trade. The erection of a rod mill will also be commenced at an early date. J. C. Williams, the president of the Curry University, of Pittsburgh, is the president of the new concern.

J. W. Fiske, 21 and 23 Barclay street, New York, manufacturer of ornamental iron, bronze and zinc work, is constantly adding new goods to his line, such as guards, racks, managers, &c. His assortment of brass and bronze goods in this line is especially complete, and he has recently fitted up J. B. Houston's stable, in this city, at a cost of \$5000.

Miscellaneous.

A press dispatch from Roanoke, Va., under date of the 15th inst., says: "The South Birmingham Coal and Coke Company were organized yesterday at Salem, this county, with a capital of \$1,000,000, with D. B. Strouse president and T. J. Schickel secretary and treasurer. Chas. F. Emery, of New York, is one of the directors. The company own 3000 acres of coal land 15 miles south of Birmingham, and will erect 100 coke ovens and a furnace at once. The principal office will be at Salem."

The Mount Torry Mining Company were organized in Winchester, Va., on the 15th inst., with a capital stock of \$1,500,000. B. H. Richards, of Baltimore, was elected president. The object of the company is to mine the manganese and iron ores on the Mount Torry furnace property, which lies between Buena Vista and the Crimora mines, in Augusta County. The company propose to begin operations at once.

Among recently authorized corporations in Illinois are the following: C. F. Scone Mfg. Company, Chicago; capital, \$50,000; to manufacture special machinery; incorporators, N. A. Ransom, R. J. Stone, C. F. Stone. Mills Permutation Lock Company, Chicago; capital, \$100,000; to manufacture locks; incorporators, J. Mills, J. Gard and F. C. Rowe. Keystone Lock Company, Chicago; capital, \$200,000; to manufacture light hardware; incorporators, William A. Gardner, Wallace Rice, Perley Hale. Leonard & Izard Company, Chicago; capital, \$300,000; to deal in engines, electrical appliances and supplies of all kinds; to build railways, furnish experts in electrical engineering work; incorporators, H. Ward Leonard, E. M. Izard, H. K. Tenney.

J. Bucknall Smith, in the first of a series of articles on wire and wire rope printed in the *London Engineer*, states that "probably no finer example of wire-rod rolling can be cited than that to be seen at Messrs. Pearson & Knowles' iron and steel rolling mills near Warrington, and where one patent rod mill is capable of rolling from 370 to 400 tons of No. 5 gauge rods per week." In this country there are a number of Garrett trains which can do very much better than that.

Owing to the recent fire at the Anaconda mines, Superintendent Marcus Daly has ordered the Chambers syndicate mines to shut down, and 600 men are out of work. The loss by the fire is estimated at more than \$1,000,000, and there was no insurance.

The Iron Age

New York, Thursday, March 21, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Outlook in the Iron Trade.

Meteorologically speaking, Pittsburgh seems have become temporarily a center of low barometric pressure for the iron trade, judging from some of the reports emanating from that place which have been given considerable currency. Were it not a little early before the annual struggle over the wages question, we would be inclined to regard them as preparatory to the coming campaign. The condition of affairs in the iron trade in Pittsburgh and elsewhere has not been satisfactory for a considerable time past. Our reports from every leading market in the country have accurately reflected it, and they have during the past few weeks shown flashes of light in the general gloom. As a matter of fact, March thus far has brought some isolated instances of improvement, which have given rise to the hope that the worst is over. Repeated disappointments have shaken the faith of the most sanguine, and with the overwhelming array of evidence of a discouraging character it takes unusual courage to express a belief in a more cheerful future. Persistency in predicting better times must ultimately be rewarded by final success. But few would be inclined to listen to sanguine views, and fewer still would act upon them.

The one great fact which is disturbing the minds of all interested in the iron and allied trades is the enormous production, notably of pig iron. Our monthly statistics show that we are making at the rate of over 7,750,000 gross tons this year, or more by 1,250,000 tons than in 1888. Such figures are well calculated to make anything but bearish arguments seem very feeble, and yet we think some points deserve consideration which make this alarming total appear less pregnant with coming disaster. First of all, then, we must insist that it is safer to divide the year 1888 into its first and second half, in order to bring out important facts. The apparent consumption of the first half—that is, the production, plus the imports and the fluctuation in the stocks—was 3,058,880 gross tons. In the second half it reached 3,628,753 gross tons. The latter figure is probably somewhat too high, because the stock statement at the close of the year did not include Bessemer iron held by consumers. Still the fact remains that in spite of constant complaints of poor business generally, in spite of the fact that the rail trade was very poor, the country consumed at the rate of over 7,200,000 gross tons of pig iron during the second half of 1888. Unfortunately we have only got the figures of the production of Bessemer pig in the two periods of last year. They stood 1,178,508 tons for the first and 1,463,310 tons for the second. Now, the production of steel rails for the corresponding time was 692,197 gross tons and 672,139 tons, which would represent respectively, allowing 12½

per cent. for waste, 778,722 and 756,157 tons as the quantity of pig consumed for rails. In other words, other articles than rails absorbed 307,367 more tons of Bessemer pig in the second half than in the first half.

The influence of the rail trade is naturally uppermost in the minds of the majority of those who study the situation. With the wretched state of affairs among the railroads themselves, the outlook is certainly discouraging enough, and yet the sales up to March 1, according to official reports, were 590,850 gross tons, to which must be added at least 40,000 tons for the new mill. Last year at the same time the forward sales were 565,629 tons, so that the amount of business booked is somewhat larger this year. Now, up to March 1 the deliveries were 147,787 gross tons, against 98,361 gross tons in 1888. The actual make, therefore, has been greater in nearly the same proportion. Official statistics to *The Iron Age* show that the rail mills having their own blast furnaces—viz.: Lackawanna, Pennsylvania, Edgar Thomson, Cleveland, Joliet, North Chicago and Union—produced in January 150,256 gross tons of pig iron, or at the rate of 4847 gross tons per day. In February the output was only 115,137 tons, or at the rate of 4112 tons per day, a falling off of 5145 tons per week. Of course only a part, which it is impossible to segregate, goes into rails, but the fact remains that there was a notable falling off in the product. Is not this the possible explanation of the recent slight rise in Bessemer pig in the West, which has puzzled so many, and was brought about by the buying of two large Pittsburgh mills, not included in the list of the works enumerated above?

In discussing our imports for 1888 in *The Iron Age* of February 14 we dwelt on the fact that their restriction, under present and prospective prices at home and abroad, would give a material addition of work to our home producers, provided the demand in this country remained in 1889 what it had been in 1888. Should the relative prices on both sides of the Atlantic be maintained, would it seem unreasonable that the imports of the following articles would be reduced as follows?

Articles.	Imports 1888.	Reduction 1889.
Pig iron.....	196,891	100,000
Steel rails.....	60,939	50,000
Steel blooms and billets.....	103,687	50,000
Wire rods.....	101,812	50,000
Totals.....	463,330	250,000

We believe that there is nothing sanguine in this estimate, considering the fact that our steel mills are well stocked with spiegeleisen; that there is no chance whatever of selling foreign rails here when they command \$28 at tidewater, and foreign cannot be laid down for less than \$40; that foreign billets and blooms are a few dollars higher than the domestic article, and foreign wire rods are driven out of the market, excepting a few points near the seaboard.

We are far from denying that the situation is grave, that we are producing pig iron at an excessive rate, and that we must be piling up notable quantities. But we hold that consumption outside of the rail trade is heavier than the majority in the trade have any conception of, that the rail trade is as heavy this year as it was in

1888, and that, furthermore, there is the prospect of more work through the crowding out of foreign products.

If we were not consuming pig iron and other products at a rate at least as great as we did during the second half of 1888—that is, at a rate of 7,200,000 tons or more—we would be piling up iron at the rate of over 45,000 tons a month. The course of the markets during January and February certainly does not justify the assumption that we are adding to stocks at anything like that rate.

Proposed Consolidation of Chicago Steel Interests.

Premature announcement was made last week by the public press of the consolidation of the North Chicago Rolling Mill Company, the Joliet Steel Company and the Union Steel Company. This consolidation has not yet been effected. We have been advised for some time of the movement in progress to accomplish this end, but have refrained from making any allusion to it at the request of those interested, who desired that negotiations should first attain a decisive stage. It will be some time in May before this point can be reached, and therefore all that is now said on the subject must be regarded as conditional. The managers and leading stockholders of the three companies are in favor of the proposed consolidation and are making arrangements to perfect it. But there are many details to be covered, individual opinions are to be harmonized, and the plan of consolidation must be ratified at stockholders' meetings of the three corporations before it can be put into practical operation. So far as known no insurmountable obstacles are to be encountered, but in a scheme so vast and covering such a variety of interests it would not be remarkable if something would develop to prevent its consummation. The great financial strength of each of the companies is in itself an argument against consolidation which may be urged by influential stockholders when they come to consider the subject in their general meeting. If two of the companies were weak and struggling for existence their owners might be expected to embrace gladly a proposition to relieve them of their burden, but this is far from being the case. It is believed, however, that no opposition of this kind will be met and that the stockholders of each company will be found to favor the scheme of consolidation by a very large majority.

The course of procedure in the organization of the new company, according to information received, is about as follows: The North Chicago Rolling Mill Company, possessing a special charter, will hold a meeting of stockholders early in May to vote upon a proposition to increase the capital stock of the company from its present issue of \$6,000,000 to probably \$25,000,000, also a proposition to authorize the purchase of the property of the Joliet Steel Company, and another proposition to authorize the purchase of the property of the Union Steel Company, or a consolidation of interests, as may be found preferable. In the meantime the stockholders of the other two companies will hold meetings to vote upon propositions to sell their property or consolidate with the North Chicago Rolling Mill Company.

The value of all the properties has been carefully determined and agreed upon, so that it is known what the consideration will be in case these preliminaries are settled favorably. A new company, probably named the Illinois Steel Company, will be formed to succeed the North Chicago Rolling Mill Company; the stock will be distributed to the stockholders of the original companies on an agreed basis, and the business of all will then be conducted under one management. No watered stock of any description will exist in this concern. Stock will only be issued by the company for value received in lands, buildings, machinery, cash and other assets of all descriptions. It will not be a trust, as some of the newspapers have termed the consolidation, but will be a purely legitimate business enterprise of large proportions. It is expected that after the consolidation is effected a cash capital of \$5,000,000 or more will be available for the purposes of the company. It is no part of the design of the managers of the various companies to in any way advance the selling price of their product, but rather by combining the experience and ability of all connected with the various organizations to produce finished materials on the most scientific and economical basis, so as to permit of the products being sold, if necessary, at lower figures in the future than in the past, insuring thereby the permanent existence of these industries, more particularly in Chicago and its neighborhood.

The properties to be included in the consolidation are the North Chicago Rolling Mill Company, who have at South Chicago a three-converter Bessemer plant, a Bessemer steel-rail mill and four blast furnaces; at North Chicago a two-converter Bessemer plant, a steel-rail mill, a structural-steel mill and two blast furnaces; at Milwaukee, mills for the manufacture of bar iron, fish plates, &c., a nail factory and two blast furnaces. The Joliet Steel Company have at Joliet a two-converter Bessemer plant, a steel-rail mill, a wire-rod mill and two blast furnaces. The Union Steel Company have at Chicago a two-converter Bessemer plant, a steel-rail mill and four blast furnaces. The total number of Bessemer converters is nine, and the total number of blast furnaces is 14. A new blast furnace is partly completed at Joliet. The annual capacity of the united works would be about 800,000 tons of pig iron, 900,000 tons of steel ingots, 850,000 tons of steel rails and 125,000 tons of miscellaneous products. At present the steel-converting capacity of some of the plants is greater than their rolling capacity, while in others it is less. In the associated operations of the works this inequality could be corrected, and other obvious advantages would be gained.

If the consolidation should be effected, its consequences would be momentous to the Northwest. Present advantages would be retained and strengthened, with the effect of considerably reducing competition from Eastern establishments engaged in the same line of business. Other branches of trade would be taken up by the new company as rapidly as they could be handled. The manufacture of structural material in all its varieties would assist in the localization of the bridge-building industry. The erection of plate mills would encourage the establishment of steel shipyards at

Chicago, where none now exist, although the business men of that city are heavily interested in lake shipping. A very long stride would be taken toward making Chicago industrially independent of the East, and the source to which the Northwest would look more than ever before for its supply of heavy material.

The Crisis in Copper.

Events have followed one another in rapid succession in copper, although the happenings have occurred almost exclusively on the other side of the Atlantic. The Comptoir d'Escompte has failed in spite of the aid extended it by the Bank of France, which is identified with the Government, and Morrison, Kekewisch & Co., who were the recognized London agents of the syndicate, have suspended. The Société des Métaux, too, is going into the hands of a liquidator. A heavy fall has taken place in the London market, where Chili bars have fluctuated between £35 and £40 for a day or two.

Here everybody is at sea. The Metal Exchange is getting a good deal of notoriety out of a system of bids and offers, ridiculously far apart, from which settling prices are made up which go out as quotations for the metal. As a matter of fact, no business has been done there lately, and *bona-fide* consumers could not secure metal for immediate use at anything like the prices named. There are so few sellers, and even a smaller number of buyers, that business is practically suspended.

The position is briefly this: What copper there is in stock in this country is held by the syndicate's agents, or by the bankers who have taken it over as collateral for loans to the Comptoir d'Escompte and the Société des Métaux. To what extent the American stock has been turned over to the Bank of France and those who acted with it lately and to what extent it is controlled by the banking houses here who were the fiscal agents of the speculators is not clearly apparent. None of this copper has been put on the market here. The mining companies who have co-operated with the Frenchmen—and they represent by far the greatest proportion of the output—have nothing to sell. They delivered as fast as they produced until the recent conference in this city. Then they agreed to stop deliveries under their contracts, from the 15th of March till the 15th of May, their credits being extended for two months, and to reduce the output by 20 per cent., the net price being put at 13 cents. Under this agreement the American mines are practically bound for two months to come, since, so far as they are concerned, the Société has thus far lived up to its contracts. Its failure will leave them with a year's extra large dividends as a remembrance of a Frenchman's folly. It is not likely that their position will be modified in any important particular until their representatives, who have gone abroad, have conferred with the leading interests abroad.

The principal element of uncertainty here grows out of the fact that the mines and the syndicate have made contracts with consumers for delivery of copper till the end of May at 16½ cents. It is obvious that something must be done to relieve the strain which this imposes.

Manufacturers will buy outside brands where they can pick them up, at a much lower price, and may be able to reimport American copper returned duty free from abroad in the original packages. There is always the possibility, too, that some of the bankers involved may prefer to make a loss now to taking their chances of anything tangible being patched up in the future. We have reasons for the belief that the American mining companies, appreciating the situation, are discussing the question of canceling the April and May deliveries, with the object of combining with the actual holders of the stock of the metal in joint sales to consumers at a considerably lower basis, say 12½ or 13 cents for Lake copper.

The point now is to reach some basis which will inspire confidence among manufacturers and the whole trade which handles copper manufactures in one form or another. While the present chaos lasts no one who can possibly defer purchases of material into which copper enters will think of buying. While the uncertainty lasts it will be well to pay no attention to the nominal quotations which are so widely published. Because somebody jocularly inclined bids 5 cents for Lake copper and somebody in a jaunty way asks 16 cents, it does not by any means follow that the mean 10½ cents represents the market.

The Tidewater Soft Coal Pool.

After many weeks of negotiation the leading producing regions of bituminous coal destined for the Atlantic Coast north of the Chesapeake have perfected an association. Seven districts are interested in the movement, being in their importance in the order named: The Cumberland, Clearfield, Pocahontas, New River, West Virginia Central and Reynoldsville. The operators of the Beech Creek district have not yet signed the agreement, but are understood to be favorable to the association formed.

Broadly, the plan has the following features. The operators of the different regions appoint the members of a governing board, the Cumberland and Clearfield districts each having two, the others each one. The board has the power to determine what quantity of coal may be required by the markets, fix the prices and make the allotments to the different districts, by percentages. It has the right to revise these decisions, as occasion may require, the assent of the representatives of five of the regions being necessary. The agreement defines the territory of the pool as north of the Chesapeake and the Delaware, and provides that no member of the association shall have the right to deliver coal, by all-rail, into Connecticut or Rhode Island, or in certain territory in Eastern Massachusetts. Commissions to middlemen are fixed, rebates to customers and the guaranteeing of freight rates are prohibited, and the provision is made that all sales shall be made at tidewater at the prices fixed by the Governing Committee.

All complaints of irregularities must be submitted in writing to a commissioner, Galloway C. Morris, of Philadelphia, to whom very wide powers are given. Before the 15th of each month each producer must forward to the commissioner a sum equal to 20 cents on the total tonnage of the

preceding month. These sums remain in the treasury as a guarantee fund until three months' payments have accumulated. Then upon the payment of the fourth month's amount, the sum contributed in the first month is returned, and so on. In this manner about \$100,000 will accumulate in the treasury. Any infringements of the agreement are punished by the commissioner, who draws from the guarantee fund a sum in the form of a penalty of 20 cents a ton on the quantities involved in the violation. The penalties go into a compensating fund, out of which sums are given to those who have not shipped their allotment, any possible surplus being afterward distributed among the other concerns. The agreement is to be binding until March 1, 1892, a period of three years, the operators in the different regions distributing their allotment among themselves. The regions themselves have been allowed the following percentages:

	Allotment per cent.
1. Cumberland, Md.....	30 1/4
2. Clearfield, Pa.....	30 1/8
3. Norfolk and Western, Pocahontas, Va.....	14 1/4
4. Chesapeake and Ohio, New River, W. Va.....	11
5. Beech Creek, Pa.....	7 1/2
6. West Virginia Central.....	5 1/4
7. Reynoldsville, Pa.....	1 1/2
Total.....	100

The only change made, as compared with last year's allotment, is that the Cumberland and the Clearfield districts each have turned over $\frac{1}{2}$ per cent. to the Pocahontas Flat Top district. It is estimated that the total tonnage will be about 5,500,000 tons, of which the Transatlantic steamship lines take about 1,000,000 tons, while a large part of the remainder is required by the New England railroad companies. The Governing Committee has announced the opening prices at \$2.60, f.o.b. Norfolk, Newport News, Baltimore, Georgetown and Philadelphia, and \$3.50, alongside, New York.

Such, broadly, is the general plan of the new pool from which the miners of soft coal for tidewater markets expect to realize fairly remunerative prices. They state that last year the profits were moderate, even in the most favored regions; that in other districts the operators have lost money, and that in one conspicuous case the appearance of prosperity has been given for stock-jobbing purposes. It is stated that the managers of a railroad, interested also in the coal district it serves, have bought coal at the mines. The railroad company, it is claimed, carried coal at very low figures—as low as 37 cents for a haul of 400 miles—undertaking also the selling of the coal. In this way the railroad has been used to advance the coal interest, the stockholders of the carrier being bled to put money into the pockets of the insiders, who are getting the coal stock ready for the public.

The price of soft coal to consumers, it is claimed, is not, therefore, unduly high, and does not place any burdens upon the manufacturer in the New England States. It is argued that however low the fuel might be put into the yards of New England iron manufacturers, no relief would be afforded them in their struggle against the inevitable tendency of the business to desert that section. It is urged that so far as the miscellaneous metal industries of that busy section are concerned, the fuel question with them is a minor point. So

long as New England manufacturers are far in advance of any of their competitors as ingenious mechanics and far-sighted business men, and so long as they have such a race of skilled workers to draw upon to fill their shops, they will control the trades in which they are now dominant. Manufacturers who are abandoning cheap water power for steam can certainly not claim that they are paying unduly high prices for their fuel.

While the advantages held by New England manufacturers will be fully recognized by every one familiar with that prosperous section of the country, it would seem a somewhat startling argument that their virtues should be made the pretext for placing burdens upon their shoulders. Especially since the West has been blessed with the cheap fuel utilized during the past few years, New England manufacturers have become more and more alive to the necessity of lowering their coal accounts. They have generally undertaken everything which might lower the cost of power. They have sought diligently to improve their boiler practice and have made heavy outlays in the direction of the most modern engines. They will view with alarm and dissatisfaction the steps which have been taken to enhance the cost of coal by pool methods. It is probable that they have more cause for uneasiness now than they have ever had, because the Seaboard Association has the appearance of greater strength than formerly.

American and Russian Petroleum Exports in 1888.

We are now in possession of statistics from Batoum, Russia, relating to the receipts of Caucasian petroleum at that port by rail from Baku, and the shipments from there to Russian ports and foreign countries. The stock at Batoum on December 31, 1888, is also given. The receipt of these details enables us to form some idea as to what Russian competition with our own petroleum really amounts to at present. The total shipments of petroleum from our oil regions amounted last year to 26,470,654 barrels of 42 gallons, leaving a stock on hand on December 31, 1888, of 18,595,474 barrels, as compared with 28,354,299 barrels, thus showing a decrease of stocks at the close of last year of 9,758,825 barrels. As the export in 1888 amounted to about 46,000,000 barrels, it appears that the domestic consumption reached about 10,000,000 barrels, constituting a total of 26,000,000 barrels delivered, representing 992,000,000 gallons of raw oil. The total runs during the year fluctuated between 1,200,000 and 1,400,000 barrels per month, May being the heaviest, with 1,449,298. While the total production of the year was 16,259,975 barrels, the deliveries from old stock and current production reached, as we have shown, about 26,000,000 barrels, therefore exceeded the output of the year by some 10,000,000 barrels. This fully demonstrated the effect of the shut-down movement inaugurated in September, 1887. The actual export of crude and refined, reduced to gallons crude, compares as follows with that of the previous year:

	1887. Gallons.	1888. Gallons.
New York.....	479,654,495	471,627,848
Philadelphia.....	193,776,717	166,380,036

Baltimore.....	12,741,061	6,836,325
Boston.....	5,609,544	4,693,722
Perth Amboy.....	22,434,260	21,611,707
From St. Louis by rail to Mexico.....	1,683,540	2,000,000
Total.....	715,902,617	673,149,638

The shipments of refined from New York alone were as follows:

	1888. Gallons.	1887. Gallons.
Countries.....		
England.....	48,711,457	50,989,977
Germany.....	88,450,153	74,906,832
Sweden and Norway.....	3,216,921	4,617,271
Denmark.....	2,352,219	3,510,832
Belgium.....	34,844,705	35,648,409
Holland.....	23,774,785	34,031,424
India and Siam.....	23,775,000	24,988,020
China and Japan.....	29,026,880	25,444,246
East Indies.....	21,423,812	22,357,630
Africa.....	3,229,947	8,831,345
Australia.....	6,782,940	4,238,564
New Zealand.....	1,660,380	1,171,960
South America.....	18,822,510	17,303,741
Central America.....	454,651	622,442
Mexico.....	1,744,451	1,912,070
Canada.....	1,955,563	1,965,455
Cuba.....	521,989	815,925
British West Indies and Guiana.....	1,964,515	1,953,445
Other West Indies.....	1,515,110	1,386,469
Other countries.....	5,000,690	8,742,725
Totals.....	319,228,758	325,408,772

It will be seen that the general falling off has not been more than about 6,000,000 gallons, or 2 per cent.—a mere trifle—and that it has only occurred to any great amount in our shipments to Holland, for which Germany has indemnified us. In other words, the Germans diverted some considerable business to their ports from the Dutch ports. The most interesting feature in our competition with Russia is that in the countries in which the Russians make the greatest efforts to supersede us—in India, China and Japan, as well as in the East Indies—New York shows a gain with refined petroleum. We may not lose ground there if we slacken our efforts in shipping always the very best to those regions, but at all events there is some consolation to reflect that there has actually been no loss of trade to speak of in our supplying non-European countries with the refined article from our port.

The receipts at Batoum last year consisted of 50,703 tank cars of petroleum, distributed as follows:

	Tank cars.
The Caspian-Black Sea Petroleum Company.....	20,848
Nobel Brothers.....	6,460
Burkhardt & Co.....	6,221
Rychner & Co.....	2,760
Naschauer & Co.....	2,420
Sundry consignees.....	11,994
Total.....	50,703

The tank cars contain 600 poods each, or together 30,421,800 poods, shipped as follows:

	Poods.
Shipments of Russian Petroleum.....	
Russian Ports.....	4,370,500
England.....	5,573,891
Turkey, Egypt and Syria.....	5,367,890
British India.....	4,369,466
Austria-Hungary.....	2,814,556
China.....	1,764,500
Japan.....	622,144
Germany.....	769,000
Italy.....	1,398,143
Belgium.....	1,420,170
Holland.....	97,550
France.....	114,000
Bulgaria, Roumania and Servia.....	285,600
Spain and Portugal.....	63,900
Total.....	29,032,210
Stock in Batoum, December 31, 1888.....	1,389,590
Total supply.....	30,421,800

As the American petroleum barrel holds 9 poods refined, the total number of American barrels shipped from Batoum last year amounted to 3,225,700; adding thereto the stock at the close of last year of 154,300

barrels, it is shown that the total supply equaled 3,380,000 of our barrels, and that the aggregate export thence, including the Russian Black Sea ports, was only about one-fifth of what the United States shipped abroad. The shipments inland on the Volga and by rail amounted last year to about 10,000,000 poods additional.

CORRESPONDENCE.

Pig Iron Warrants.

To the Editor: Since writing you on the 20th I am in receipt of your issue of the 21st, and have read with interest the second batch of criticisms on the warrant company. With such a great variety of ideas as to what the warrant company is, it would be strange if there were not a great variety of criticisms. I am struck particularly by the great number of theoretical remedies advanced to correct the evils of the iron business, and that the writers lose sight entirely of the fact that these theories have never been lived up to and never will be.

Every iron-maker sees clearly when depression comes what his neighbor ought to do, but loses sight of the fact that said neighbor never has done and never will do that particular thing. The rich furnaceman argues that the poor furnaceman who cannot hold his stock ought to stop, but the poor furnaceman does not stop. He has obligations to meet, and runs his furnace to meet them. He argues that the rich furnaceman who can stop ought to do it. But the latter goes on piling up his stock, doing what he thinks to be to his interest, not what the general interest demands. It has been so in the past, and it will be so in the future.

Another writer says that no man has a right to build a furnace who has not money enough to run it, and loses sight of the fact that no matter how correct his theory is, it will not stop the objectionable practice. Furnace building, like other building, always costs more money than is estimated, and will do so as long as the world lasts. Builders start in with the belief that they have enough, but the actual cost always exceeds their estimate.

The question the iron-producer has to meet is, What is the best practicable remedy to apply to the business as it is? instead of satisfying himself of the great good that would come to him if the conditions were as they ought to be. Let them treat actual problems by actual experience, and not by worn-out theories. There is no better theory known than the free trade theory, but practical men know that its correctness ends when its practical application begins. Just so with the theories that have been advanced to correct the disadvantages existing in the iron business.

There are several conclusions pertaining to this question that are worthy of consideration.

1. That if, through some means, the needs of the iron business could be met, the evils existing corrected and discrepancies and differences adjusted, it would be a very desirable thing for that interest.

2. That a combination of the iron interests of the United States would hardly be possible, and, if possible, would not be desirable, as it would antagonize the public and bring about legislation to protect the public.

3. That a responsible company whose power is limited to issuing warrants over which they can hold no control has no objectionable features and might be used as a means of bringing about needed reforms in the iron trade.

4. That during each season of depression the rich furnaces submit to a long period of losing prices, looking forward to the

time when the poor furnaces will be out of their way and they can get the benefit of high prices; whereas, when the high prices come Great Britain, who has held her surplus stock under a warrant system, puts millions of tons in the American markets and thereby gets a large share of the benefit which our own furnaces should and under the warrant company's plan would reap.

5. That the country does not over-produce as long as it produces less than it consumes.

6. That it is more to the interests of the American furnaces to run constantly and supply our own demand fully than to lie idle part of the time and let the British furnaces furnish part of our supply.

7. That iron could be made cheaper if some means were adopted that would enable our furnaces to run steadily, instead of stopping during dull years.

8. That the carriage of iron on the local storage system, through which furnacemen pile up iron and borrow money on it, is a temporary and makeshift device, and therefore is unwise and unprofitable and can never result in stability or a large carriage.

9. That the carriage of stocks on the storage system, like the Marshall iron in Pittsburgh and the Philadelphia and Reading iron in Pennsylvania, must always be "a menace to the market," because it is not a permanent carriage.

10. That a system that would take the surplus iron off the hands of the producer at fair prices and provide a permanent carriage of that iron until needed would be a great relief to the producer.

11. That this can only be accomplished through a powerful and responsible company who can issue a negotiable warrant that will have sufficient standing to insure its being sought after and carried with confidence by the investor.

12. That every commodity that has been put in shape for investment has not only been permanently carried, but has brought about the result of reducing the fluctuations in the price of that commodity to a minimum and keeping the prevailing prices reasonably near the actual value.

13. That investment cannot continue or exist in any article without absorbing a certain amount of that article.

14. That every class of reliable security that investors have once taken hold of they have continued to carry to the full extent of issue.

The fear that such carriage by the investor would result in depressing the market is utterly groundless, and arises through unfamiliarity with the results attending the listing of other good securities.

Some writers fear that if such a carriage of iron by the investors were inaugurated the iron would be thrown on the market in case of a panic, to the great demoralization of prices. This is another plausible theory that actual experience in other securities disproves. In a panic investors always throw on the market the class of securities that, although quoted high to-day, may possibly be worth nothing to-morrow, and make haste to invest their money, instead, in some security that they know must always represent an absolute value. The very want of confidence in a great many of the articles of investment and the certainty in the value of iron might make a demand enough for the warrants to advance the price of them.

Many who have thoroughly examined the subject acknowledge that the warrant company is the only safe means of affording relief to the iron business. They are not only heartily and earnestly in favor of the warrant company, but are coming forward to co-operate with it. Furnaces representing an annual capacity of 770,000 tons, distributed over four iron-producing States, have already accepted

these facilities, and signed contracts with the company for 20 years. Additional furnaces representing an annual capacity of 650,000 tons have approved of the plans of the organization, and agreed to make contracts which only await the formal ratification of their boards of directors.

The fact that the warrant company cannot buy or sell pig iron warrants puts it entirely out of the reach of criticism. They can, however, refuse to take iron that is not up to the standard grade; hence they can bring about a uniform classification. They can refuse to deliver iron without a receipt; hence they can protect furnaces against short weight. Many writers acknowledge that the warrant company would be a benefit if it could be made a success, but cite a great many obstacles to its success. No obstacle has been suggested hitherto that the company is not willing to take upon itself the burden of overcoming. The warrant company stands on its merits. If it is a good thing it will endure and prosper. If it is a bad thing it will not, and, as one of your correspondents remarks, "It is here; let us give it a trial." Very truly,

GEORGE H. HULL,

President American Pig Iron Storage Warrant Company.

NEW YORK, March 5, 1889.

This subject having been thoroughly ventilated, we must now consider the discussion closed.—EDITOR.

Motive Power at the Paris Exposition

The exhibits in the main hall of the Palais de Machines will be arranged in six rows extending lengthwise of the building. Four of the rows will be 50 feet wide, and two 33 feet. There will be four lines of main shafting, one to each of the four wide rows. Steam will be supplied by boilers placed in one of the courts, and so arranged that the different types may be examined. The total power is estimated at about 40 tons of water evaporated per hour. Steam will be supplied, says *Industries*, by a variety of boilers, all of which will be placed in one of the courts, so that the visitor may conveniently compare the different types of steam generators. The total power of the boilers is estimated at about 40 tons of feed-water evaporated per hour. The following firms are among the exhibitors in the boiler department: Belleville, de Mayer, Knap (London), Babcock & Wilcox (Glasgow), Davey Paxman (Colchester), Wehyer & Richmond, Fives-Lille, Dayde & Pillé, Roser, and Dulac. The distribution of steam to the various engines will be effected by underground steam-pipes laid in conduits throughout the length of the main building. The size of the pipes is calculated so as to give a maximum velocity of flow of 33 feet per second. Various boiler pressures will be used, but in the majority of cases the pressure will be between 90 and 120 pounds per square inch. To provide for the condensing engines, there will be two water mains running parallel with the steam-pipes, and both 2 feet diameter—one for the cold-water service bringing the water to the condensers, and the other for the return of the warm water. The administration pays the exhibitors of boilers, who supply steam for the general service, at the rate of 8500 francs (£340) per ton of steam delivered per hour during seven hours per day, and 180 working days. Should steam be required for a longer period than seven hours daily, the administration makes a further payment of 6 francs for each ton of steam; and if the exhibition should be prolonged beyond the 180 days, the payment will be 5 francs for each ton of steam supplied. Taking an average of 26 pounds of steam per horse-power hour, it will be seen from the

above figures that the administration pays at the rate of about $\frac{3}{4}$ d. per horse-power hour.

Of steam engines there will be shown a great variety, and the following are among the more important firms exhibiting in the motive power department. Société d'Anzin, Davey Paxman, Société le Phenix, Société de fabrication des locomotives et des machines de Winterthar, Société d'Oerlikon, André Berger de Thaur, Société alsacienne de constructions mécaniques de Mulhouse, Le Cruesot, Fives-Lille, Thomas Powell, Lecouteux et Garnier, Société française de matériel agricole de Vierzon, Biérix, Boulet, Wehyer et Richemond, and Cail. The so-called "machine Casse," made by the Fives-Lille Company, will be the only example of the beam engine. This will be of 60 $\frac{1}{2}$ horse-power. The administration pays 40 francs per horse-power supplied during the whole time the exhibition is open, viz., seven hours per day for 180 days; and if the power is required after this period the payment will be $\frac{3}{4}$ d. per horse-power per hour. The four lines of shafting will be supported on bearings fixed to a system of standards, cross girders, and longitudinal girders, the latter also serving as supports for the traveling platforms, which will run the whole length of the main hall. These will be electrically worked, and used as travelers during the installment of the exhibits, and later on for the convenience of visitors, who will thus be carried from one end of the machinery hall to the other. The supply of feed and condensing water for a plant of boilers and engines representing about 4000 horse-power is a matter of some importance. The total quantity of water required per day is estimated at 6000 tons, or 850 tons per hour. The water will be pumped from the Seine and stored in elevated tanks of 166 tons capacity, the pumping plant being in duplicate, one by MM. Quilacq & Meunier (Wheelock engine) and the other by M. Thomas Powell, Rouen (Worthington steam pumps). The water will be carried to the machinery gallery by a main of 2 feet diameter placed along the Avenue Suffren.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., March 19, 1889.

A few days ago a prominent Pennsylvanian, a friend of Secretary Windom, observed that Pennsylvania was getting nothing in the distribution of Administration favors and that New York was getting the lion's share. The Secretary replied, jokingly, "Well, you see, New York gets the offices, and we will give Pennsylvania protection."

This piece of pleasantry had more in it than might be thought. It is evidently the purpose of the Administration to prepare a scheme of customs duties which will afford ample protection to every industry which can be fostered to success in the United States, making the reduction of revenue more upon a restrictive policy toward foreign importations than upon reduction of duties, which invariably results in increased revenues. The Senate bill, with some improvements, will form the basis of the Administration measure.

The appointment of Mr. Tichenor to the Assistant Secretaryship of the Treasury, charged with the consideration of revenue questions and customs appeals and decisions, is in itself a guarantee of a vigorous protective policy. His long service in the office of supervising agent of the Treasury, and his familiarity with every branch of the customs business, are assurances of a fixed line of construction of tariff statutes on the side of protection.

It is understood that as soon as the administrative routine is well established the work of collating the material on hand for a tariff measure will be taken up. It is not improbable that Congress will be called into extra session about October to consider revenue matters in advance of the regular business of the session, which will be exceptionally important, relating particularly to an elaborate system of naval construction and coast defense.

The Bureau of Construction in the Navy Department is displaying considerable activity in preparations for the new vessels authorized by the late Congress. The vessels now building, authorized and provided for, and the latest list will when completed enable the United States to make quite a show on the ocean. The present Congress, however, when it gets to work on naval affairs, from all indications expressed by Senators and Representatives in convention, will provide for a long list of all classes of modern steel-armored and unarmored vessels. The new list comprises an armored steel cruising monitor not less than 3000 tons, 7500 indicated horse-power and maximum speed 17 knots an hour; a cruiser of the Vesuvius type, a dynamite gun battery, speed 21 knots an hour; two steel cruisers or gunboats, 800 to 1200 tons, and one large ram for harbor defense.

Deoxidized Bronze.

A representative of *The Iron Age* paid a visit recently to the foundry of the Deoxidized Metal Company, of Bridgeport, Conn., of which L. H. Bacon is president, O. C. Smith is secretary and treasurer and W. W. Keys is superintendent. The works are equipped with 23 crucible melting holes, which are to be supplemented in the near future with a large reverberatory furnace, to be heated with oil, capable of melting 10,000-pound charges. The foundry is to be enlarged by the addition of a building on adjoining property recently acquired, which is to be 80 x 130 feet, and is to be used chiefly for heavy loam work. Until now the largest castings of deoxidized bronze made were the rings of digesters for the bisulphite wood pulp process, which weighed 8500 pounds. Five rings and top and bottom casting composed such a digester 22 feet long, 7 feet 8 $\frac{1}{2}$ inches in diameter and weighed 28,000 pounds. Soon larger digesters are to be made, weighing 45,000 pounds, the company having orders for 19 of these large and 17 small digesters. Tests made in 1886 by Dr. T. M. Drown, of the Massachusetts Institute of Technology, proved the resistance of the metal to the corrosive action of bisulphite of lime. Experiments were made later, in 1887, by Prof. P. De P. Ricketts, of the Columbia School of Mines, from whose reports we tabulate the following results:

	Time.	Weight taken, grams.	Residue, grams.	Loss, grams.
Hot concentrated sulphuric acid...	10 days	42.9816	41.9415	1.0401
Cold 50 % sulphuric...	3 months	38.7560	38.7142	0.0418
Hot 50 % sulphuric...	10 days	38.7142	38.6425	0.0717
Cold sulphurous acid...	4 months	36.9640	36.9325	0.0315
Hot sulphurous acid...	10 days	36.9325	36.8470	0.0855
Cold sulphurous acid with 5 % sol. sodium hyposulphite...	4 months	39.2405	39.1738	0.0667
Cold solution, with calcium and magnesium chlorides...	39.0289	38.9115	0.1174
Cold conc. ammonia...	4 months	38.2055	37.7778	0.4277

The fact that the use of the flux employed in melting by the company, which we understand consists chiefly of hor-

shavings, does remove the sub-oxide of copper so fatal to sound casting, of copper alloys is proved by the following analyses of Calumet and Hecla copper and deoxidized copper:

	C. & H. 1	C. & H. 2	C. & H. 3	Deoxidized.
Metallic copper.....	99.854	99.63	98.10	99.89
Sub-oxide of copper.....	0.293	0.324	1.95	0.07
Iron.....	0.015	0.011	...	0.01
Tin.....	0.021	0.01
Silver.....	0.012	0.024	0.03	0.02
Phosphorus.....	trace	trace	trace	...

So far as the effect of deoxidizing upon the strength of copper is concerned, we may note the following results of tests made at the Watertown Arsenal: A deoxidized hard copper wire 0.104 inch diameter broke under a tensile strain of 69,730 pounds per square inch, showing a contraction of area of 1 per cent., a second similar wire showing 69,960 pounds and 2 per cent. respectively. A later report by W. N. Harris, chief engineer U. S. N., shows that 27 specimens of an alloy consisting of 88 parts of copper, 10 parts of tin and 2 parts of zinc, made by the Deoxidized Metal Company, and by the navy yards at Portsmouth, N. H., New York, and Norfolk, Va., showed that the tensile strength of the bronzes of the company was greater by 65.8 per cent. and the elastic limit was 58 per cent. better. The elongation was 53 per cent. less and the reduction of area 36 per cent. less.

The company use the alloy for a wide range of castings, like cylinders, pumps, bells, car trimmings, journal bearings, tuyeres for blast furnaces. They make also as a specialty very handsome and neat advertising articles, like letter openers, paper cutters and paper-weights, and have produced a wide variety of bronze nameplates for engine builders, machinists and manufacturers, among those supplied being the Westinghouse Company; the Lane & Bodley Company; the Eagle Iron Works, Detroit; Russell & Co., of Massillon, Ohio; the Benham Hydraulic Motor Company, of Providence; the National Water Purifying Company; the Ellithorpe Air Brake Company; P. T. Hodge Company, of Detroit, Mich.; Union Machine Company; Strong Locomotive Company; H. R. Worthington; the Vulcan Iron Works and John Mollenhauer & Co. An additional specialty of the company is the production of anti-friction metals and babbits.

Boys who have undergone mechanical training in the appropriate department in Girard College, Philadelphia, have comparatively little difficulty in securing good places in which to commence business. This statement is confirmed by the superintendent of mechanical instruction. Said T. Mason Mitchel, the gentleman referred to: "There are boys in South America, who have gone from here, earning \$2500 and \$3000 a year. They are all through the West, in New York and the Eastern States. The agent whose business it is to obtain places for the boys has very little trouble now, and we have many demands for the boys. They generally leave when they are about 15 or 16 years old, and with the knowledge they have obtained in this department many of them secure positions in workshops and manufactories paying them \$4 or \$5 a week. After that the boy must work out his future for himself. The trade of machinist seems to have the preference among the boys, and to this calling more go than either to wood-working, foundry-work or mechanical drawing. The advantage of school-taught mechanics gives the boy a standing upon entering workshops much above the raw beginner, and if he has proved a worthy student his acquirements are soon discovered, and his time under instruction in the shop is shortened, and he is generally paid much higher wages."

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St.,
PHILADELPHIA, Pa., March 19, 1889.

Pig Iron.—The market has been very quiet since date of our last report, and while quotations are unchanged prices are not as firm as they were a week ago. One of the leading producers remarked that "he had seen a much worse market than the present one, inasmuch as Iron could be sold at a price. Concessions of from 10¢ to 25¢ per ton would enable them to place a great deal of Iron, while there had been times when it would have been impossible to sell large lots at anything near the market." This appears to voice the general sentiment—viz., that while the market is dull buyers could easily be found by shading prices a few cents per ton. The truth is that sellers cannot afford to make concessions, for which reason they seem determined to get current quotations or abandon the business, but it is impossible to say what conditions may be forced upon sellers before things take a turn. It is doubtful if any furnace is making money at to-day's rates, and not a few have it in mind to reduce their output unless things make a more encouraging showing within the next three or four weeks. Whether this will be the case or not is very hard to foresee. Under ordinary circumstances there ought to be an improvement, and the general drift of opinion is that such will be the case within the next 30 or 60 days. But unless the Southern and Western production can be marketed to their local trade it will be impossible for the East to show much rallying power. Efforts to secure bids during the past few days, especially for Southern Irons, do not afford much hope that such will be the case, although there is always a possibility of sudden changes in this respect, and while things are gloomy enough at the moment, a great deal might be said on the other side of the question. As, for instance, the low stocks, as well as the low prices of Iron. The probability of large crops during 1889, as well as the very satisfactory prices realized for those of 1888, is also an important factor. Then again, while trade is undoubtedly suffering by reason of the unsettled conditions of the railway interests, it is more than probable that these matters are already in much better condition than they were during 1888. The worst has been realized, improvement has already commenced, and it is contrary to the progressive spirit of the business community to believe that everything is going to the bow-wows. Then again, there is a disposition in some quarters to regard the financial difficulties in Paris as likely to cause some trouble here. Is it not more reasonable to regard the condition of the British Iron markets as more nearly affecting the United States? The cable dispatch to *The Iron Age* on March 13th had the following: "Holders of Pig Iron warrants have been realizing freely on this week's advance and the 'bears' have sold largely again the last few days. Makers' brands are strong at a further advance, the Continent and Canada being good customers. The demand for Steel of nearly all descriptions, as well as for Iron, is something enormous, and prices still show a rising tendency in all sections. Requirements for consumption and export alone necessitate heavy purchases. The fluctuations in prices during the week include 6d to 2/6 rise on Scotch Pigs, 3d on Cleveland Pigs, 6d on Hematites, 1/3 on Steel Rails and Billets, 2/6 on Steel Slabs, 6d on Steel Blooms and 3d on Bessemer and Siemens Steel Tin Plate." It is only fair to look at both sides of the question,

and while the immediate position of the Iron trade is far from satisfactory, there are gleams of sunshine as well as clouds of darkness. As to prices, the range for all qualities may be given about as follows for tidewater deliveries: No. 1 Southern to choice Pennsylvania, \$17 @ \$18.50; No. 2 do., \$16 @ \$17, and Gray Forge, \$15 @ \$15.50. Between these extremes sales are made according to quantity, quality, &c., the bulk of transactions being at medium figures.

Blooms.—There is a good deal of inquiry for Steel, and bids are made at extremely low figures, but sales appear to be on the basis of last week's prices, say: \$28 @ \$28.50, at mill, for Nail Slabs; \$29 @ \$30 for Sheet-Iron Billets; \$30 @ \$31 for Soft Tank, and \$35 @ \$36 for Flange purposes; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$41 @ \$42.50; Scrap Blooms, \$32 @ \$33 per "Bloom" ton of 2464 lb.

Muck Bars.—There is a little more interest shown in this department, and prices seem to be a trifle steadier. Sales are reported at from \$26.50 to \$27, delivered, and these may now be considered fair average prices.

Bar Iron.—The market remains in the dull condition possible, the absence of large orders for car building and pipe making being greatly missed at this season. There is very little demand except from stores and the smaller class of consumers—or large consumers who take only small lots—and at very irregular prices. As a matter of fact, there are no prices that leave a profit to the manufacturer, but there are plenty that are said to be below cost of production. This, of course, cannot continue much longer, but in the meantime it appears to be the general condition of things in this vicinity. Nominal rates are from 1.75¢ to 1.85¢ for best Refined Bars, but there is plenty of business done at less than the inside figures for what is claimed to be first quality Iron. Grooved Skelp is nominal at 1.70¢ @ 1.75¢, and Sheared at 1.80¢ @ 1.85¢.

Plate and Tank Material.—The demand is a little better in some respects, although not large enough to cause any special activity. Orders for several hundred tons of Ship Plate have been distributed around, and it is expected that other fair-sized orders will be given out shortly, but prices are at the lowest point yet reached, with no indication of stiffening until the demand becomes more active. Nominal quotations are about as follows: 1.90¢ @ 2¢ for Ordinary Plates and Tank Plates; 2.1¢ @ 2.2¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.3¢ @ 3.4¢; Fire-Box, 3.5¢ @ 3.7¢; Steel Plates, Tank and Ship Plate, 2.1¢ @ 2.25¢; Shell, 2.7¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 3¾¢.

Structural Material.—There is nothing new to report this week. Some of the mills are busier on specifications of material sold some time ago, but there is very little new work at the moment, although it is expected that a considerable amount of bridgework will come out within the next few weeks. Prices are about as quoted before, viz.: Bridge Plate, 2¢ @ 2.1¢; Angles, 1.95¢ @ 2.05¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢ for Iron or Steel.

Sheet Iron.—The demand keeps up very fairly, considering the depression in other departments. Sales are well up to the average for the season, and prices are steady at about the following quotations for small lots:

Best Refined, Nos. 26, 27 and 28....	3 @ 3¼¢
Best Refined, Nos. 18 to 25....	2½ @ 3 ¢
Common, ¼¢ less than the above.	
Best Bloom Sheets, Nos. 26 to 28....	4 @ 4¼¢
Best Bloom Sheets, Nos. 22 to 25....	3½ @ 4 ¢
Best Bloom Sheets, Nos. 16 to 21....	3½ @ 3½¢
Blue Annealed.....	2½ @ 2½¢
Best Bloom, Galvanized, discount.....	65 ¢
Common, discount.....	67½ ¢

Steel Rails.—The demand has not been important, but the feeling is becoming more confident and prices are very steady. It is possible that \$27.50 at mill might be accepted for specially desirable orders, but \$28 is the usual quotation, with a number of sales at that figure for small lots. The general impression is that prices will begin to improve soon, and that the lowest figures were made some time ago.

Old Rails.—There is very little doing, but prices seem to be without much change. There is less inquiry, and it might not be as easy to place large lots as it was recently, but the limited supply enables sellers to secure from \$24 to \$24.50 for lots delivered at mills near by. Nothing doing in lots in store or to arrive, so that \$23.50 @ \$24.50 are nominal quotations. A lot of 500 tons special quality of T's was sold here to-day at \$25, f.o.b. cars.

Scrap Iron.—The market is dull, and unless to parties actually in need of supplies it would not be easy to effect sales at last week's prices, although quotations are nominally as before, viz: \$20.50 @ \$21 for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice \$22; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish Plates, \$23 @ \$24; Old Car-Wheels, \$17 @ \$18, Philadelphia.

Nails.—No improvement whatever. Several mills have stopped, and although there is a material decrease in the output, prices appear to be as demoralized as ever. Nominal quotations are \$1.90 @ \$2 from store, but carload lots are sold at all sorts of prices, according to brand, necessities of seller, &c.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington street, CHICAGO, March 18, 1889.

Pig Iron.—Dealers report a very quiet week. Some of them have been fortunate enough to book a fair tonnage, but it has been mainly in the closing of deals which have been in progress for some time. But little has occurred to indicate the tendency of prices, although some buyers have put forth "feelers" which have convinced them that for the present at least concessions will not be made by the manufacturers of Coke Irons. Bottom, therefore, seems to have been touched in this market, and while manufacturers are not hopeful of an early advance, yet they feel confident of maintaining values for some time at about their present range. Speculative inquiries have been received from outside parties who would be willing to invest at close prices, but they were not successful in finding manufacturers willing to meet their views, although quite a considerable number of furnace companies were approached for the purpose. A large contract for Castings, amounting to about 2200 tons, was awarded by the builders of the Milwaukee Avenue Cable Road to a distant foundry at prices below the bids made by Chicago parties. The proposed consolidation of the three steel companies is regarded with much interest by the Pig Iron trade, as it is believed that their large furnace capacity, which is not now wholly needed for their own requirements, may be partly diverted into the general market. This would cause such a competition for business that distant furnaces would have but a slight chance to dispose of any of their product here except in the case of those making special qualities. A revival of activity in the Steel Rail trade, however, would very considerably change this aspect of affairs. The demand for Lake Superior Charcoal is still dormant, but it is believed that large consumers would anticipate their usual buying season if the makers were inclined to lower their prices. Cash quotations are as follows,

f.o.b. Chicago: Lake Superior Coke, No. 1, \$16 @ \$16.50; No. 2, \$15 @ \$15.50; No. 3, \$14 @ \$14.50; Chicago Scotch, No. 1, \$17.50, for small quantities; Lake Superior Charcoal, Nos. 1 and 2, \$19.50; Nos. 3 to 6, \$20; American Scotch (Black-band), No. 1, \$18 @ \$19; Jackson County Silvery, No. 1, \$18 @ \$18.25; other Ohio Soft Irons, No. 1, \$17.25 @ \$17.50; Southern Coke, No. 1 Foundry, \$16.25 @ \$16.75; No. 2 Foundry and No. 1 Soft, \$15.75 @ \$16; No. 3 Foundry, \$15 @ \$15.50; Gray Forge and No. 2 Soft, \$14.50 @ \$14.75; Tennessee Charcoal, No. 1, \$19.

Bar Iron.—The condition of business has not improved, but the mills are not now soliciting orders with as much vigor as they were. Prices are too low to make large orders for future delivery at all desirable, unless raw material should be considerably cheapened. Quotations on mill lots of Good Common Iron range from 1.57½¢ to 1.62½¢, half extras, f.o.b. Chicago, with some mills willing to do a little better on desirable specifications. Store prices continue at 1.80¢ @ 2¢, according to quantity and quality.

Structural Iron.—In this line extreme dullness is reported. The season has not yet fairly opened, although the weather has latterly been so favorable for building that an active demand for material could have been reasonably expected, with so much work in sight. Prices are unchanged.

Plates, Tubes, &c.—Large transactions in Plates have occurred. The heaviest order was taken by J. T. Ryerson & Son, aggregating about 1000 tons of Steel, for conduits for the Milwaukee Avenue Cable Road, on private terms. A number of smaller orders ranged from 20 to 80 tons. Store business was also quite satisfactory. Very low prices were made on mill orders, but store quotations are unchanged.

Sheet Iron.—The demand for Black Sheets for present requirements is very limited, but large orders could be secured for late summer and fall delivery if the mills were willing to enter them at current quotations. Buyers have pretty thoroughly tested the manufacturers on this point, but have found them disinclined to meet their wishes. Prices are so low that the manufacturers believe a lower range of values hardly possible, and they prefer to keep themselves in a position to profit by an improvement if it should come along in the meantime. The mills making the best grades of Sheet Iron are understood to be pretty well filled with orders from the general trade, so that they are able to maintain this attitude. Quotations on mill lots of No. 27 for delivery range at about 2.85¢ @ 2.90¢, f.o.b. Chicago. Small lots of No. 27 are sold at 3.10¢ @ 3.20¢ from store, but the movement is now quite light.

Galvanized Iron.—A very remarkable change has taken place in the business done by manufacturers' agents. Orders have been received for large quantities. The apparent opening of spring and the very mild weather have evidently stimulated all classes of business consuming Galvanized Iron. Buyers are so urgent in numerous instances that agents have been obliged to wire their orders to give dispatch. If trade continues at its present pace this month will show the heaviest sales ever made by some of the houses represented here. Prices are unchanged, small lots being still quoted by jobbers at 65 % off for Juniata, and 65 % and 2½ % for charcoal, while manufacturers' agents ask from 2½ % to 5 % more on similar lots.

Merchant Steel.—The demand for Tool Steel increased considerably during the past week, some dealers reporting a growth in business of fully 50 % on the previous week. The resumption of quar-

rying and other outdoor work has evidently caused the improvement. Prices are unchanged.

Steel Rails.—No sales of any consequence were made during the week. Manufacturers are accepting the situation as cheerfully as possible under the circumstances, believing that a better trade will surely come along in the course of the summer. Quotations are unchanged at \$30 @ \$30.50.

Old Rails and Wheels.—No transactions in Old Rails have come to light. Holders ask \$21, and bids of \$20.80 have been refused. There is nothing doing in Old Car-Wheels. Holders will not accept \$18.50, but insist that they must get \$19.

Scrap.—A little more inquiry from consumers is noted, but actual business is light. There is apparently no market for Wrought Scrap, but small sales have been made of low grade material. Cast is very quiet. The inquiry for Mixed Steel referred to last week did not result in business. Quotations are nominally unchanged.

General Hardware.—The demand for Shelf and Heavy Hardware has quickened very decidedly, and most jobbers report an excellent trade in progress. Stocks of staple goods are diminishing very rapidly and a firmer feeling is perceptible in the lines which have latterly been most depressed. The advance in Screws has presumably checked sales for the time being, but, as stocks in distributors' hands are known to be light, an early revival is anticipated, which may be hastened by the intimations now circulating of another advance in contemplation by the manufacturers. Collections are not so good as they have been, quite a large percentage of the country trade asking for a little more time, desiring bills dated ahead and resorting to devices for deferring payments usual when they are not able to make prompt collections from their own customers.

Nails.—Jobbers are still in control of this market, selling Steel Nails at \$1.95 for carload lots and \$2 @ \$2.05 for small lots, and Wire Nails at \$2.35 for carload lots and \$2.40 for small lots; but their stocks are being depleted, and they are talking of advancing prices to correspond with manufacturers' rates. Wire Nails are especially firm.

Barb Wire.—The remarks concerning Nails are applicable to Barb Wire, which is still being sold by jobbers at 2.75¢ @ 2.80¢ for small lots of Painted, with the usual reduction for carloads, and Galvanized at 60¢ @ 65¢ @ 100 lb advance over Painted. A firmer feeling is developing among the jobbers, and it would not be surprising if a slight advance should soon take place.

Pig Lead.—Dealers report rumors of large sales at 3.55¢ to the local trade, but on investigation they have ascertained that the bulk of the Lead sold was for shipment. A better inquiry is noted at the close of the week.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, March 18, 1889.

Pig Iron.—The local market for Pig Iron has been quiet throughout the week. A few large contracts have been negotiated, but all have not been consummated. The bulk of business has been confined to carload lots, but several sales of 1000-ton lots have been effected—one lot of 1500 tons, one of 1200 tons and one of 1000 tons, all of Foundry grades, at the same range of prices as were quoted a week ago. Also 1000 tons Gray Forge Iron at \$13.25 and 1000 tons ditto at \$13.50, cash, here. There has been little call for Car-Wheel

Iron, but the offerings have been small. A keen observer of the situation remarks that the light present consumption of Pig is the weakest factor in the market, foundries, rolling mills and agricultural works alike showing a light business. Prices of the higher grades of both Foundry and Forge Irons are well sustained, and even the lower grades are not quotably lower. Neither buyers nor sellers are as decided or pronounced in their views as they were a few weeks since, and the undercurrent has a neutral tint. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1 (new classification).....	\$15.00 @ \$15.50
Southern Coke, No. 2 (new classification).....	14.50 @ 14.75
Southern Coke, No. 3 (new classification).....	14.00 @ 14.25
Ohio Soft Stone Coal, No. 1.....	15.00 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 15.00
Mahoning and Shenango Valley.....	16.50 @ 17.00
Hanging Rock Charcoal, No. 1.....	21.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 22.00
Tennessee and Alabama Charcoal, No. 1.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 2.....	17.00 @ 18.00

Forge.

Strong Neutral Coke.....	13.00 @ 13.50
Mottled Neutral Coke.....	12.25 @ 12.50
Gray Forge.....	13.00 @ 13.25

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @ 25.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @ 22.00

Manufactured Iron.—The market has ruled slow and easy, even agricultural works, which are usually busy at this season, showing a small order-book; mills and foundries are alike dull, but prices are without change of importance.

Nails.—There has been a fair demand and a steady market for both Iron and Steel. 12d @ 40d sell at \$1.95 @ \$2 per keg, with 10¢ rebate in carload lots at the mills. Steel Nails sell at \$1.90 @ \$2, and Steel Wire Nails at \$2.55 @ \$2.60 per keg.

Old Material.—There has been a fair demand and moderate sales of Old Rails at \$21, cash, here, but Old Wheels have remained quiet, though steady, at about \$18.50, cash, at Cincinnati.

Cleveland.

CLEVELAND, March 18, 1889.

Iron Ore.—About 600,000 tons of new Ore have been sold in Chicago during the past week, but the details of the sale are very rigorously guarded. Outside of the Minnesota Ores involved in the transaction there is little basis upon which to establish prices. Much of the Ore is from the Norrie mine, whose stockholders are also stockholders in the consolidated mills of Chicago and vicinity. More of it is of a grade of Bessemer Ore something below such standards as the Republic and Champion. Considerable Minnesota Ore was also included in the lot. All of the Ore was sold at mine prices and, from the best evidence obtainable, the Minnesota Ore brought a price equivalent to \$4.50, f.o.b. vessels at Two Harbors. Six or seven of the most prominent Ore men in the city were at Chicago last week completing the negotiations. About half of the Ore will go to Chicago by rail and the other half on boats belonging to the purchasers, with an aggregate tonnage of 500,000 tons. None of the sales comprising this large transaction is contingent upon vessel rates or freight charges from the mines to the shipping ports. The representatives of the mining companies are now at home responding to the vigorous inquiries for new Ore pouring in from every quarter. A sale of Minnesota Ore for far Eastern delivery is reported to-day at a price said to be equivalent to \$5.75, f.o.b. vessels Buffalo. It is not known definitely how much Ore is involved in the last-mentioned sale,

but it is believed that the amount is not less than 40,000 tons. Negotiations are now pending for considerable Chapin Ore to be sent to the same furnaces at prices equivalent to \$5.15 or \$5.20, f.o.b. vessels Buffalo. All of the Ore companies in this city are anticipating liberal orders from this new market, which seems likely to make a surplus production out of the question. The heavy buyers in the Mahoning and Shenango valleys have yet to close contracts for new Ore, although everything now indicates the immediate opening of the market at an average advance of about 30¢ or 40¢ over last season's opening prices. Three additional vessel charters are reported to-day at \$1.10 from Escanaba, and there is now every indication of this figure being agreed upon as a season rate from that port, although 125,000 tons of Minnesota Ore will be carried to Buffalo, at the rate of about 30,000 tons per month, at \$1.25 per ton.

Pig Iron.—The market continues to improve both in firmness and prices. Sales of Bessemer and Foundry Irons have occurred during the past week at an advance of from 25¢ to 50¢ over last week's quotations. Many heavy purchasers are evidently in the market with the purpose in view of piling up their stocks before any additional advances are reported. Sellers view the situation calmly, and seem in no mood for forcing sales or pleading for purchasers.

Manufactured Iron.—Common Bar at 1.60¢, at the mill, is not particularly strong, and Sheets are weak at present prices, based upon No. 24 at 2.75¢.

Scrap Iron.—A small lot of Old Axles sold during the week for \$24.50. Some improvement is noted in the market for Rails, old Americans now being quoted at \$21.75 @ \$22.25, with several sales at the former figure.

Pickands, Mather & Co., dealers in Lake Superior Iron Ores and exclusive agents for the Minnesota Iron Company, the Chandler Iron Company and the Colby, Milwaukee and North Champion mines, have opened an Eastern office at 222 South Third street, Philadelphia. Edmund D. Smith & Co. are the Eastern agents of the firm.

St. Louis.

OFFICE OF *The Iron Age*, 212 N. Sixth st.,
St. Louis, March 18, 1889.

Pig Iron.—The general condition of the market remained unchanged. There is a fair demand, but buyers seem rather indifferent and are not disposed to pay any advance for future supplies. It is evident that large consumers are holding off, anticipating a lower scale of prices, but furnaces are firm in their determination not to cut prices, and are refusing to sell for more than a few weeks ahead. Prices are holding up very well considering the dullness of the past week, and are being strictly adhered to as quoted herewith:

Southern Coke, No. 1 Foundry,	\$15.50 @	\$16.00
Southern Coke, No. 2 Foundry,	15.00 @	15.25
Southern Coke, No. 3 Foundry,	14.50 @	14.75
Gray Forge.....	13.50 @	14.00
Ohio Softeners.....	18.00 @	20.00
Lake Superior Charcoal.....	21.00 @	21.50

Missouri.

Charcoal Foundry, No. 1.....	16.00 @	16.50
Charcoal Foundry, No. 2.....	15.00 @	15.50

Tennessee.

Charcoal Foundry, No. 1.....	17.50 @	18.50
Charcoal Foundry, No. 2.....	16.75 @	17.50

Connellsville Coke, f.o.b. East St. Louis, \$4.70; St. Louis, \$4.85.

Bar Iron.—There is considerable business being transacted in this department, and during the past week some good-sized orders were taken for railroad work. Prices are weak and unsettled, and it depends entirely upon the size of the order

what terms are made. Small lots from store are quoted at \$1.80; carload lots from \$1.65 to \$1.75, according to circumstances.

Barb Wire.—It is difficult to ascertain anything that is of an encouraging nature, either as regards prices or amount of business being transacted. Mills are spasmodically employed, and there is no demand that can be relied upon to continue for any length of time, and the only symptom that can be construed into being favorable is the opening up of country roads, allowing farmers an opportunity of laying in stocks of Wire for spring consumption. Prices show no improvement whatever, and unless the demand increases very shortly are likely to be lower, as there is very little trade to go round, with too many after it. Prices are quoted as follows: For carload lots Two and Four Point Painted, \$2.80; carload lots Two and Four Point Galvanized, \$3.40, f.o.b. St. Louis; less than carload lots, 5¢ additional.

Detroit.

WILLIAM F. JARVIS & Co., under date of March 18, 1889, report as follows: While no large sales have been reported in this market during the past week, there has been a greater number of carload and 50-ton orders, and inquiries have been received from so many different points in the East that it looks as if an active buying would soon take place. The present warm weather, if it continues for any length of time, will hasten the opening of navigation, and buyers for early navigation delivery will place their orders earlier than usual. The Detroit and Cleveland Steam Navigation Company start their boats between Detroit and Cleveland on Wednesday of this week, and rates to Eastern points will therefore be less and will allow Irons in this section a better chance to compete for Eastern business. We quote as follows:

Lake Superior Charcoal, all numbers.....	\$19.50 @	\$20.00
Lake Superior Coke, all ore.....	18.75 @	19.25
Lake Superior Coke, cinder mixed.....	17.75 @	18.25
Standard Ohio Black Band.....	18.75 @	19.25
Southern No. 1.....	17.00 @	17.50
Southern Gray Forge.....	15.00 @	15.50
Southern Silvery.....	16.50 @	17.00
Jackson County (Ohio) Silvery.....	18.25 @	18.75
Old Wheels.....	18.50 @	19.00

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, March 18, 1889.

Pig Iron.—Notwithstanding there is an active demand and heavy movements of Iron, prices still remain about stationary and without the advance that was anticipated some three or four weeks ago. Very little Iron, however, is accumulating in the yards and many of the furnaces are shipped up close, and unless the stack be running freely on No. 1 orders for this grade for immediate shipments are declined. The situation appears to be about in this condition: Very active demand, heavy shipments and very low prices. How long this condition of the Pig Iron market will continue appears to be so far an unsolved problem. Under the general rules that govern commercial affairs, as well as the still more active demand that will undoubtedly arise as the spring advances, it can hardly be otherwise than that prices will advance within a short time. The uncertainty of the future, however, has very strongly induced furnaces to continue to sell their outputs at present figures, and many of them have made contracts that extend quite far into the year. The best grades from furnaces that have a reputation are commanding the high prices named last week, while furnaces that make an off-grade and those

whose reputation is not fully established are disposing of their output at 25¢ to 75¢ off. Purchases for speculative purposes are just now a little off, although there is still an occasional transaction on this account.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave.,
PITTSBURGH, March 19, 1889.

The general Iron and Steel trade has not improved much the past week. The Iron failures and assignments within the past few weeks at different points throughout the country have had a bad effect upon the trade. We are assured that there are mills booking orders at prices that do not cover actual cost of production, and these are getting the bulk of the business, but it is only a question of time when the works will pass into the hands of assignees, and probably be sold out for the benefit of the creditors.

The river Coal trade continues in a very depressed condition. Since the first of the present month nearly 12,000,000 bushels have been shipped away from Pittsburgh by river, and all the down-river markets are overstocked and very dull, with prices away down to lay-down cost, if not below the same.

Pig Iron.—The market has been less active the past week, the volume of business reported having been considerably below that of the two preceding weeks. However, notwithstanding there has been a falling off in the demand, prices are still maintained, and sellers are apparently not any more numerous than buyers. Our city furnaces are all sold up, and are making no effort to obtain additional contracts. Furnaces in the Shenango and Mahoning valleys are not anxious to sell in this market at present prices, as they say they can do better at home. Bessemer appears to be more inquired for than any other kind, and is firmer in consequence. Foundry Irons have been a little more active during the past few weeks, but the demand is chiefly of a hand-to-mouth character. We quote prices as follows:

Neutral Gray Forge.....	\$14.50 @	cash
All Ore Mill.....	15.50 @	16.00
White and Mottled.....	14.00 @	14.25
No. 1 Foundry.....	16.00 @	16.50
No. 2 Foundry.....	15.25 @	15.50
No. 2 Charcoal Foundry.....	21.50 @	22.00
Cold Blast Charcoal.....	25.00 @	27.00
Bessemer Iron.....	16.75 @	16.00

The only sale of Bessemer Iron reported was 1000 tons, at \$16.80, cash; we can also report a sale of 1200 tons Gray Forge at \$14.50, cash, which appears to be the ruling price.

Spiegel and Manganese.—The upward movement in Manganese noted in our last report still continues, and the prices of a week ago cannot now be duplicated. The price now quoted is \$60 per ton for 80%. Spiegel remains about as last quoted—\$28.50 @ \$29 for 20%.

Muck Bar.—There is no change to note in the general position of the market; demand continues light, especially for immediate delivery; some sales could be made for future delivery, but makers do not appear disposed to contract ahead at present prices. We hear of some small sales at \$27, cash, for immediate delivery, and some of the brokers intimate that it can be bought for less.

Manufactured Iron.—Trade continues slow for the season, and prices are unsettled and unsatisfactory; it is thought, however, that there will be an improvement in the demand before the close of the month. We quote Bars at 1.65¢ @ 1.75¢; Plates, 2.10¢ @ 2.15¢; No. 24 Sheet, 2.50¢ @ 2.75¢; Skelp at 1.65¢ for Grooved, and 1.95¢ for Sheared; all 60 days, 2¢ off for cash.

Nails.—The Nail trade continues dull, and the prospect for improvement is not very encouraging at present; usually there

is a good trade in March, but at present there is very little doing. Pittsburgh makers continue to hold firmly at lower rates, which they claim afford only a small margin for profit. We continue to quote at \$1.90 for 12d to 40d, 60 days, 2 % off for cash.

Wrought-Iron Pipe.—There is a very fair business; the demand is increasing, but prices show no improvement, and the latter is the discouraging feature connected with the business. It is claimed that orders have been taken within the past few weeks at prices that, under the most favorable circumstances, do not more than cover actual cost of production. This being the condition of the market, some firms are making but little effort to obtain business. Their main object is to hold their regular customers if possible. Discounts are quoted as follows: Black Butt-Welded Pipe, 60 %; Galvanized do., 52½ %; Black Lap-Welded, 70 %; Galvanized do., 55 % @ 57½ %. These quotations apply only to car lots. Boiler Tubes, 65 and 10 % off regular list; 2-inch Tubing, 11¢ ½ foot, net; 5½-inch Casing, 32¢ @ 33¢ ½ foot, net.

Old Rails.—There is more inquiry, but there have been no sales reported in this market for some weeks. American Tees are quoted nominally at \$23 @ \$23.50. While there is not much doing, the belief obtains that prices will rule higher as soon as the demand opens up, as the visible supply is small and steadily growing less.

Steel Rails.—The local market remains much the same as noted a week ago. The movement on foot among manufacturers for better prices meets with approbation here, provided it is carried out in good faith. It is well known that the prices current for some time past have been unsatisfactory and unremunerative. It is believed that there will be an improved demand before long, as prices are low and buyers may become aroused to the possibility of an advance. For small orders prices are still quoted at \$28 @ \$28.50, cash, but large orders can be placed for considerably less.

Blooms, Billets, &c.—There is not much inquiry, and in the absence of recent sales may be quoted at \$27.50, cash. Domestic Bloom and Rail Ends quoted at \$18 @ \$18.50, cash.

Railway Track Supplies.—Spikes are lower and we now quote at 2¢, 30 days, free on cars in Pittsburgh; Splice Bars, quotable at 1.70¢ @ 1.75¢, and Track Bolts at 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

Merchant Steel.—There is no improvement in the demand, and prices continue unsettled and unsatisfactory.

Old Material.—Demand continues light and prices weak. No. 1 Wrought Scrap, \$19 @ \$19.50, net ton; Wrought Turnings, \$13 @ \$13.50; Car Axles, \$24 @ \$24.50; Cast Scrap, \$14.50 @ \$15, gross ton; Cast Borings, \$11 @ \$12, gross; Car-Wheels, \$19 @ \$19.50; Old Steel Rails, \$17.50 @ \$18 for short and \$19 @ \$20 for long lengths.

Louisville.

LOUISVILLE, KY., March 18, 1889.

There have been a fair number of sales reported during the last week in 100-ton lots. Two sales of 1000 tons each, one Lake Superior, the other Southern Forge and Bright Irons, are the largest sales reported. The prices were low, but at an advance over the lowest sales so far. It is hoped that the market from now on will show a slight improvement, and some of the largest buyers state that they think

prices during the spring and summer will advance probably \$1 ½ ton. We quote as follows:

Southern Coke, No. 1 Foundry, new classification.....	\$14.75 @ \$15.25
Southern Coke, No. 2 Foundry, new classification.....	14.25 @ 14.75
Southern Coke, No. 3 Foundry, new classification.....	13.75 @ 14.25
Gray Forge.....	13.25 @ 13.75
White and Mottled, different grades.....	12.75 @ 13.25
Silver Gray, different grades.....	13.00 @ 13.50
Southern Charcoal, No. 1 Foundry, No. 1 Mill.....	16.25 @ 16.75
Southern Car-Wheel, standard brands.....	14.75 @ 15.25
Southern Car-Wheel, other brands.....	21.75 @ 22.75
Hanging Rock Coke, No. 1 Foundry.....	18.00 @ 19.50
Hanging Rock Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Hanging Rock, Cold Blast.....	19.50 @ 21.00
	20.75 @ 23.75

New York.

Office of The Iron Age, 66 and 68 Duane street, NEW YORK, March 19, 1889.

American Pig.—The market is quiet, with only a moderate amount of business being transacted. As reported last week as probable, we note elsewhere the lower opening prices for Ore made by Withersbees, Sherman & Co., of Port Henry, N. Y. We quote for standard Northern brands, tidewater delivery, \$17.50 @ \$18 for No. 1 Foundry; \$16.25 @ \$17 for No. 2 Foundry, and \$15 @ \$15.50 for Gray Forge.

Scotch Pig.—The market is very quiet, and there is little doing, in spite of the fact that Iron cannot be laid down at present prices on the basis of cost in Scotland. We quote: Coltness, \$20.50 @ \$21; Shotts, \$20 @ \$20.50; Langloan, \$20 @ \$20.50; Summerlee, \$20.25 @ \$20.50 and Dalmellington, \$19.25 @ \$19.50.

Spiegeleisen and Ferromanganese.—We note a sale of about 5000 tons of 20 % Spiegeleisen to a Rail mill at private terms. Several additional negotiations are under way, the market being \$28 @ \$28.50. A number of lots of Ferro were sold at \$57 @ \$58 for 80 %.

Structural Iron.—Very little new work of magnitude was closed during the week under review. The Rochester bridge alluded to was taken by a local concern. Prices continue low, without any immediate prospect of recovery. We quote: Sheared Plates, 1.9¢ @ 2¢; Universal Mill Plates, 2¢ @ 2.1¢; Angles, 1.9¢ @ 2.1¢; Tees, 2.35¢ @ 2.5¢, and Channels and Beams, 2.8¢, on dock.

Plates.—We quote Iron Tank, 1.9¢ @ 2.2¢; Shell, 2.25¢ @ 2.4¢; Steel Tank and Ship Plate, 2.1¢ @ 2.25¢; Shell, 2.35¢ @ 2.5¢; Flange, 2.6¢ @ 2.75¢, and Fire-box, 3.4¢ @ 4¢.

Bar Iron.—We quote: Carload lots on dock, half extras, Common, 1.65¢ @ 1.7¢; Medium, 1.7¢ @ 1.75¢, and Refined, 1.75¢ @ 2¢.

Steel Rails.—Sales have been light, not aggregating more than about 6000 tons East and West. There are some new orders in the market, and a number of those already alluded to have not been closed. Prices now are firm at \$27, at mill, as Eastern mill efforts to buy a shade lower than this have been unsuccessful. This is equivalent to \$27.75 @ \$28, at tidewater, according to location of mill, and represents an advance of about \$1 ½ ton over the lowest point reached, which was a shade under \$26, at mill. It is reported, too, that Pittsburgh has withdrawn its lowest figures, which were \$26 @ \$26.50, and is now asking \$27 @ \$27.50, at mill, for large quantities. Negotiations are pending for the purchase of an additional allotment at about \$25 a ton by an Eastern mill.

Wire Rods.—There has been a sale of about 500 tons at a sterling price, and Basic Rods continue steady at \$41 @ \$41.50. Belgian Acid Rods have been

offered by one party lately as low as \$39.25. In Pittsburgh the mills are full of business, the selling price being \$41 @ \$41.50, at mill, which prevents Foreign Rods from going far inland.

Old Rails.—We note a sale of 500 tons of American Old Rails from a road in this vicinity at \$23. In the West the tone is better.

Track Material.—The market is dull at \$2 for Spikes, and \$1.75 @ \$1.85, delivered, for Angle Bars.

Scrap Iron.—While there is more inquiry for No. 1 Scrap, prices as a whole remained unchanged. We quote for cargo lots: No. 1 Scrap, \$20 @ \$21, delivered on boat; Turnings, \$13 @ \$14, do.; Cast Scrap, \$15.50 @ \$16, do.; Cast Borings, \$12.50 @ \$13.50, and Horseshoes, \$23 @ \$23.50.

Coal Market.

The adoption of a spring schedule of prices, announced a week ago, serves to illustrate one of those cases where reduction fails to reduce. This results from a failure on the part of the transportation companies to reduce tolls simultaneously to correspond with the reduction in prices per ton. The position meanwhile is practical stagnation, buyers and sellers alike hesitating so long as the toll question is pending. Confidence is expressed that by April 1 a definite understanding will be reached by all parties. The Hard Coal men last week accepted prices substantially the same as those previously named for Free Burning, so that quotations are uniform. The figures for different periods, therefore, compare as follows:

	Broken.	Egg.	Stove.	Chest.
Winter circular	\$3.95	\$4.30	\$4.65	\$4.65
Present	3.75	3.90	4.15	4.00
	20	40	50	65

The Lehigh Valley and Lehigh Coal and Navigation companies and the Reading agreed upon the following at the mines: Broken and Egg, \$2.35; Stove, \$2.60, and Chestnut, \$2.40. The spring prices last year were: Broken and Egg, \$2.50; Stove, \$2.75, and Chestnut, \$2.60, while the winter prices for the season of 1888-89 were \$2.65 for Broken and Egg, \$2.90 for Stove, and \$2.75 for Chestnut.

The lowest rates quoted of individual Coal are: Stove, \$4.25; Chestnut, \$4, alongside. Production at the mines for the week ending March 16 is 514,457 tons, an increase of 28,705 tons compared with the previous week, and an increase of 174,000 tons compared with the same week in 1888. Since January 1 the increase is 489,000 tons compared with the corresponding date last year.

The Seaboard Association agreed to the following schedule, which is now in effect: F.o.b. at Philadelphia, Norfolk, Newport News, Baltimore and Georgetown, \$2 60 ½ ton of 2240 lb; f.o.b. at South Amboy, Perth Amboy Weehawken, Hoboken and Port Liberty, for shipments to points outside of the harbor of New York, and also destined to points on the Hudson River north of Fifty-seventh street, and to points on the East River east of Hell Gate, \$3.15 ½ ton; f.o.b. at Elizabethport and Port Johnson for shipments to points on the Hudson River north of Fifty-seventh street and to points on the East River east of Hell Gate, \$3.05 ½ ton; f.o.b. at South Amboy, Perth Amboy, Elizabethport, Port Johnson, Weehawken, Hoboken and Port Liberty, for shipments to points on the North River south of Fifty-seventh street and to points on the East River west of Hell Gate, \$3.25 ½ ton, but all sales made as delivered alongside in the harbor of New York, south of Fifty-seventh street, North River, and on the East River west of Hell Gate, shall not be less than \$3.50 ½ ton of 2240 lb so delivered. We present details con-

cerning the organization of the association editorially.

The case of Cox & Brothers & Co. against the Lehigh Valley Railroad is being heard before the commission at Washington.

Financial.

Little improvement is yet visible in general trade, as there are too many disturbing influences. Still, the distributive movement is spoken of as satisfactory in most departments, favored by mild weather and facilities for transportation remarkably good for this early date in the season. The Hudson River is open to Albany, and heavy freights will soon be moving on the canals. In the coal regions the canals were opened last week, the earliest day on record. The clearings of 40 cities for the week ended March 16 were \$1,056,524,425, compared with \$689,278,657 for the corresponding period (blizzard week) last year. The percentage of increase this year was 54.4%. Outside of New York the gain was 23.6. New York increased 75.6, Boston 33.1, and Philadelphia 46.4%. As concerns the crops, favorable reports are received from the Weather Bureau. In the Northwest the season is declared to be from one to three weeks in advance. The most demoralizing feature within the last few days is the financial situation in Paris, growing out of the threatened dissolution of the copper syndicate. All speculative articles were more or less affected. Wheat, previously declining, took another downward turn and breadstuffs weakened in sympathy. Cotton dropped to some extent. Provision traders find a free outlet for their hog products, but prices were weak owing to large receipts. Business in dry goods was more active than before this season, although the spirit of trade and the volume of transactions were scarcely up to expectations. The strike in Fall River gave a firmer tone to cotton goods. Grocers had a fair business, with sugar tending higher. The acceptance by Commissioner Walker of the chairmanship of the Western Railroad Association was well received, but the renewed cutting of rates by several roads served to neutralize any favorable indications, and prompted Judge Cooley to remark that offenders must suffer where the law has been violated. The Interstate Commerce Commission discussed the subject of making through export rates to the disadvantage of New York and adjourned for two weeks.

The Stock Exchange markets were unsettled and toward the close of the week there was heavy selling on reports of the suspension of the Société des Métaux and of the placing of the Comptoir d'Escompte in the hands of a liquidator. The week opened with lower coal stocks, following the reduction in the prices of coal. Another drop took place on Friday, influenced by fear of trouble between Austria and Serbia, and news of the engagement of gold for export to Europe. Saturday's bank statement had no unfavorable influences. The selling of St. Paul, Lake Shore and other stocks was followed by reaction. On Monday Boston houses sold very freely, and there were but few exceptions to the general depression. On Tuesday prices fluctuated widely, closing with a small gain in the general list. The Chicago, Burlington and Quincy's annual report proved more unfavorable than was expected. The results for the year are a net loss of \$8,000,000. Though neither the fixed charges nor any dividend was earned, 5 per cent. was paid.

The weekly bank statement shows a loss of \$477,425 in surplus reserve, which item now stands at \$8,068,435. This loss was due to the expansion of loans to the

amount of \$3,335,000. Deposits increased \$3,914,100. The increasing demand for accommodation and the indisposition of banks and trust companies to loan except to regular customers suggests the probability of firmer money for some weeks to come, especially in anticipation of the April settlements, unless the Treasury should purchase bonds in much larger amounts. Commercial paper is firmer at $4\frac{1}{2}$ @ $4\frac{1}{2}$ % for 60 @ 90 days indorsed bills; $4\frac{1}{2}$ @ $5\frac{1}{2}$ % for four months; longer dates, $5\frac{1}{2}$ @ $6\frac{1}{2}$ %.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered.....	107½
U. S. 4½s, 1891, coupon.....	107½
U. S. 4s, 1907, registered.....	128½
U. S. 4s, 1907, coupon.....	129½
U. S. currency 6s.....	120

A syndicate is said to have purchased \$30,000,000 worth of Government bonds, which, it is believed, the Secretary of the Treasury will take during April. It is stated that the five railroads controlled by the Poughkeepsie Bridge syndicate will all be merged into one company, with a capital of \$8,000,000. Charles H. Worth & Co., Boston pork packers, are reported to have made an assignment, with \$750,000 liabilities.

The market for sterling was not in the least influenced by the news from Paris, and it is probable that it will not be materially affected if the Comptoir d'Escompte should be sustained. Still, with discounts in London at the bank minimum and sight sterling so close to the gold exporting point, there is a possibility of gold shipments as an exchange operation. With reference to events in Paris, a member of the house of J. & W. Seligman & Co., which until recently had financial relations with the syndicate, is reported as saying that not even the wealth of the Rothschilds could sustain the syndicate on the present plan of operations for two or three years. The most suitable course would be to get rid of its 120,000 or more tons of copper in a way that would cause the least disturbance. Sterling is firm at \$4.86½ @ \$4.89½.

The imports of merchandise at this port during the week were \$9,925,436, of which \$2,860,000 represent dry goods. Since January 1 the aggregate is \$111,542,000, against \$107,240,000 for the same time last year and \$99,343,000 in 1887.

The exports of specie from this port last week amounted to \$2,113,250, making a total since January 1 of \$8,486,000, as compared with \$5,985,000 for the same time in 1888.

The Bureau of Statistics reports of exports for February show a decrease of about \$1,800,000 as compared with the exports for February, 1888. There is a decrease of about \$10,000,000 for the eight months ending February 28 as compared with the corresponding eight months of last year, but for the first two months of the present calendar year there is an increase of about \$600,000. The exports of corn for February show an increase of about \$2,000,000, of oats an increase of \$500,000, of wheat a decrease of \$700,000, and of wheat flour a decrease of about \$1,200,000.

The shipments of petroleum for the week were exceedingly large, aggregating 4,965,928 gallons, making a total since January 1 of 25,762,810, as compared with 19,113,666 gallons shipped during the corresponding period of last year. Latest advices from Hong Kong say that Russian kerosene oil is not wanted even at \$2 per case, while American oil has been taken freely at \$2.30 @ \$2.50.

The Harvey Steel Works, at Newark, N. J., a new concern which was built to work on the Harvey patents, began rolling yesterday.

Metal Market.

Copper.—The failure of the Société des Métaux, of Paris, and its inability to carry out the contracts it concluded with Copper mining companies in this country and elsewhere, have radically changed the position of the metal in the leading markets of the world and all the producing countries. To judge from the cablegrams received from Paris and London, all is confusion for the moment and in a state of transition, so that it will not unlikely take several days ere it is known what will be done with the Copper on hand for accounts of the defunct syndicate on both sides of the Atlantic, or part of it, and whether all the bankers' guarantees on now repudiated contracts will hold good. The solution of these questions, which cannot be obtained in a day or two, nor in the course of several weeks, probably, and the action of *bona fide* consumers in the meantime will determine the price of Copper thenceforward, surrendered once more to the legitimate influences of the demand and supply, and, after continued fluctuations, the metal will then settle down to greater steadiness. For any bankers or groups of bankers to attempt exercising a control is a matter not deserving consideration of a serious kind, we should say, after the experience of the past 18 months. The demoralization is too deep-seated and widespread, and nothing but legitimate commercial influences can restore a rational equilibrium. Last year we had the experience with Tin, which declined in the early summer to £75, in order to gradually recover a figure which was still low enough to allow consumption to take hold of the metal for legitimate wants. Speculation then has a chance to assist in regulating the price. When we last reported the price of Copper in London was £51; last night it was £40, spot, and £36, futures, and closed to-day at £39 @ £40 for Chili Bars, spot. Quotations here have been too ridiculously wide apart to serve as a criterion of the state of affairs; hence they may be looked upon as entirely nominal. We discuss the situation editorially.

Lead.—Has been dull and weak, 400 tons being sold at 3.70¢, at which it closes nominally, as there are no more buyers thereat. The Western quotation is 3.50¢ @ 3.55¢, with a rather confident feeling as regards impending spring developments.

Spelter.—The recent weakness and decline to 4½¢ Common Domestic has provoked a better spot and future demand, so that the price named could not be shaded toward the close. An early spring opening would benefit the metal materially.

Antimony.—A steady jobbing trade has been going on at 12¢ for Hallett, and 13¢ for Cookson.

Tin.—At the time of our last report spot Straits commanded £94. 10/, and futures £95. 7/6; they stood respectively £93. 5/ and £94. 10/ yesterday, with sales of 450 tons in the meantime. After settling down to a more quiet tone, sales were made in this market at 20.95¢ @ 21.05¢ for 50 tons May, 10 tons June at 21.20¢, and 20 tons July at 21¢ @ 21.20¢. Yesterday 20.90¢ was bid for spot, March and May, and 20.95¢ for April, with sellers at 20.20¢ for spot and March, and 21¢ @ 21.05¢ for April and May. Spot Tin closes at 21½¢ to-day. **Tin Plates.**—While the English market has continued firmly sustained, business here has been on a restricted scale merely. The following are the closing quotations, in large lines, per box: Liverpool quotes Coke 13/ @ 13/3; Siemens-Martin Steel, Charcoal finish, \$4.75 @ \$5.50; Ternes, \$4.12

@ \$4.25; Coke Tins, \$4.22½ @ \$4.30, and Wasters \$4.12½ @ \$4.15.

New York Metal Exchange.

The annual report of the New York Metal Exchange shows that the receipts were \$12,413.07, while the disbursements were \$11,815.78. The invested property of the concern is valued at \$55,538.52, which includes the building with \$46,106.25. This property is equal to an average of \$165.30 on each certificate of membership outstanding.

The following sales are reported:

THURSDAY, March 14.	
10 tons Tin, April.....	21.30¢
128 tons Lead, April.....	3.77½¢
100 tons Lead, August.....	3.87½¢
100 tons Lead, spot.....	3.75¢
FRIDAY, March 15.	
16 tons Lead, May.....	3.77½¢
28,000 pounds G. M. Copper, March.....	14.00¢
SATURDAY, March 16.	
48 tons Lead, spot.....	3.72½¢
16 tons Lead, March.....	3.72½¢
16 tons Lead, May.....	3.75¢
96 tons Lead, September.....	3.85¢
MONDAY, March 18.	
10 tons Tin, June.....	21.20¢
10 tons Tin, July.....	21.20¢
10 tons Tin, May.....	20.95¢
10 tons Tin, July.....	21.00¢
TUESDAY, March 19.	
30 tons Tin, May.....	21.00¢
10 tons Tin, May.....	21.05¢

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs. 4; Arms, cs. 47
Curley, J. & Bro., Cutlery, case, 1
Corbiere, Fellows & Co., Mach'y, pkgs., 231
Clark, G. A. & Bro., Mach'y, cs., 239
Erie Desp. Co., Mach'y, pkgs., 10
Field, Alfred & Co., Anvils, 176; Hwd., ck, 1
Hartley & Graham, Arms, cs., 12
Knauth, Nachod & Kuhne, Mach'y, cs., 4
Lau, J. H. & Co., Arms, cs., 6
New England Paper Co., Tub Mach'y, 1
Reed, Holliday & Son, Mach'y, cs., 7
Sacks & Richmond, Nails, cks, 20
Schoverling, A., Arms, cs., 12
Taylor, Thos., Mdse., cs., 5
Western Electric Co., Electric Light Plant, pkgs., 9
Width, N., Mach'y, cs., 3
Wiebusch & Hilger, Lim., Mdse., cs., 27; Arms, cs., 5
Witte, John G. & Bro., Cutlery, cs., 9
Order, Mach'y, cs., 76

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 20, 1889.

The situation of the Copper market is still chaotic. The Comptoir D'Escompte has secured an advance of 40,000,000 francs from the Rothschilds and others, but even this fails to clear up the uncertainty in regard to the signature of that institution given in connection with contracts between the syndicate and the mines. It is certain, however, that nothing decisive will be undertaken before the American delegates arrive, on this matter or with respect to any new combination. Their assent is essential to the conclusion of an effective agreement. The Société des Métaux was unable to meet engagements Monday, and brokers, in order to protect themselves, sold at any price they could obtain. One transaction in Bars was made at £35. Brokers formerly employed by the syndicate have ceased taking up Bars delivered on contracts and are unlikely to make purchases. The collapse of the syndicate is, in fact, generally believed to be final. Since Monday the open market has displayed more firmness under the stimulus of improved demand; prompts sold at £39 @ £39. 10/, and futures subsequently moved up to £38 @ £39, at

which sales were reported of three months. Best Selected is £45 @ £46, nominal.

Block Tin was virtually neglected until within a few days and prices declined under the influence of the depression in Copper. The demand has increased the last few days, particularly for consumption, and prices have improved. Straits shipments the first half of March to England and America were 860 tons.

Speculation in Pig Iron warrants has been large and influenced in a degree by the collapse in Copper, which induced free selling. The consumptive demand is steadily increasing, and this fact, together with a marked decrease in the stocks, has caused firmer prices again. Additional furnaces are blowing in. Some brands of Scotch are again higher, and Middlesboro' Pig is 6d up, but Hematites have been sold at a slight reaction from the highest figures.

In Tin Plate there has been a large American business at 6d advance on previous purchases. Inquiries and orders are increasing daily, and prices continue to harden.

Old Iron is held at somewhat higher prices, owing to the firmness of the general market, but the demand is not brisk. America is buying little.

Present high prices tend to restrict business in the Steel department to some extent, and except in Rails and shipbuilding sorts the trade is only fair at present. Makers have not changed their prices for Iron Bars, Sheets, &c., but report a strong and fairly active market.

Scotch Pig—Prices are maintained throughout, the market continuing active:

No.	1	Coitness, f.o.b. Glasgow	55/6
No. 1	Summerlee, " "	55/	
No. 1	Gartsherrie, " "	52/	
No. 1	Langloan, " "	53/6	
No. 1	Carnbroe, " "	46/	
No. 1	Shotts, " at Leith	53/6	
No. 1	Glengarnock, " Ardrossan	50/6	
No. 1	Dalmellington, " "	45/6	
No. 1	Eglinton, " "	44/6	

Steamer freights, Glasgow to New York, 5/

Liverpool to New York, 10/.

Cleveland Pig.—There has been a continued brisk trade, and prices are strong. No. 1 Middlesboro', G.M.B., 39/6; No. 3 ditto, 37/6.

Bessemer Pig.—A large business has been done, but at slightly lower prices. West Coast brands, mixed numbers, 47/6, f.o.b. shipping point.

Spiegeleisen.—The demand is fair and prices remain firm. English 20 % quoted 80/, f. o. b. N. W. England shipping point.

Steel Rails.—The market continues strong and the demand fairly active. Heavy sections quoted at £4. 7/6, and light sections £4. 15/ @ £4. 17/6, f.o.b. at N. W. England shipping point.

Steel Blooms.—There is a good demand for these and prices are firm. We quote £3. 19/3 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Only a fair trade reported, but sellers very firm. Bessemer, 2½ x 2½ inch, £4. 6/3, f.o.b. at N. W. England shipping point.

Steel Slabs.—The demand moderate and prices a shade easier. Bessemer £4. f.o.b. at N. W. England shipping point.

Old Rails.—Business moderate and buyers and sellers apart. Tees quoted at £3. 5/ @ £3. 7/6, and Double Heads, £3. 7/6 @ £3. 10/, c.i.f., New York.

Scrap Iron.—Sellers are firm, but only a moderate business passing. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—Small sales making at previous prices. Bessemer quoted £2. 10/ @ £2. 12/6, f.o.b.

Tin Plate.—Transactions have further increased and the market continues strong. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade.....	15/3 @ 15/9
IC Bessemer Steel, Coke finish.....	13/9 @ 14/
IC Siemens.....	14/ @ 14/3
IC Coke, B. V. grade.....	13/3 @ —
Charcoal Terne, Dean grade.....	12/6 @ 13/

Copper.—Market still unsettled, but closing firmer. The quoted prices at the close were: Bars, £39. 10/ @ £40 for spot; £38 @ £39, nominal, for three months' futures. Best Selected, £45 @ £46, nominal.

Manufactured Iron.—There continues to be a good trade in this branch at steady prices. We quote, f.o.b. Liverpool:

Staff, Ord. Marked Bars.....	£ s. d.	£ s. d.
" Common.....	8 @ 8	2 6
Staff, Bl'k Sheet, singles.....	7 @ 7	12 6
Welsh Bars (f.o.b. Wales).....	5 @ 5	2 6

Tin.—The market rather slow, buyers and sellers apart. Straits quoted at £94 @ £94. 5/, spot, and £94. 15/ @ £95 for three months' futures.

Lead.—Very little doing, but prices steady. Quoted at £12. 10/ for Soft Spanish.

Spelter.—The demand moderate, but prices steady. Quoted at £17. 5/ for ordinary Silesian.

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	13.4
Florin (Netherlands).....	40.2
Florin (Austria).....	35.9
Vireis (Portugal).....	\$1.08
Vireis (Brasil).....	54.6
Mark (Germany).....	23.8
Kilogram.....	Pounds 2.205
Picul.....	134.

CHILE.

VALPARAISO, January 18, 1889.—Copper.—During the fortnight under review sales were made on the spot to the extent of 18,204 quintals at \$25.86 @ \$26.40 per quintal. Then the official cable quotations from London were still £98 or thereabout. The same, however, inspires no confidence, exporters being afraid of French financial affairs; so that nothing could be sold now except at a material decline. Coal.—Newcastle has been paid 40/ @ 41/ on the spot, while for distant floats 42/6 @ 45/ is asked, but there is no disposition to pay such a price. Exchange.—90 days' sight on London may be quoted 299d. —Weber & Co.

BELGIUM.

BRUSSELS, March 9, 1889.—Iron.—The Belgian Iron market has been firmly sustained during the week. Current production of our works is moving off steadily, the higher figures being submitted to quite readily. As for the foundry branch, it should be mentioned that the export trade leaves a good deal to be wished for, but this is compensated for by an all the greater domestic demand. Old Iron, having also risen in price, is about the best indication that raw material remains scarce and wanted. Following are the quotations to-day in francs & kg: Foundry, 4.95 @ 6.30; Forge Pig, 4.70 @ 5.80; Merchant No. 1, 12.50 at Belgian stations; 12 f.o.b. at Antwerp; Beams at Belgian stations, 12; f.o.b. at Antwerp, 11.75; Angles, respectively 13.50 and 13; do for Vessels, 14.25; Sheets, No. 2, 15.50; do Steel, 15. It should be added that Thyle-Château has sold some Beams at 12 @ 12.10, f.o.b. at Antwerp, which shows the tendency of the market.—Moniteur des Intérêts Matériels.

GERMANY.

HAMBURG, March 9, 1889.—Iron.—Advices from the Rhenish Westphalian Iron market continue reassuring. Great firmness prevails, there being no abatement in the demand. Pig Iron has been lively at stiff prices, especially as regards Spiegel, firmly held as heretofore at 63 marks per ton. The rolling mills absorbing increased amounts of Forge Pig; the latter is as well sustained as ever at 53 @ 54, while Foundry Pig is unaltered. Thomas is in lively request at 45; Bessemer is still rather dull; English at 46; White Luxembourg is worth 35 @ 37 marks and Gray 44 @ 46. Germany produced last year 4,229,484 tons of Iron, against 3,907,304 in 1887. Of this amount, 2,064,060 tons were Forge Pig and Spiegel; 305,878 Bessemer; 1,253,878 Thomas, and 516,282 Foundry

Fig. Merchant Iron continues doing tolerably well for domestic use, although the margin made is moderate; for export the trade therein still flags; all other Finished Iron is doing remarkably well. The demand revives for Wire products likewise. Foundries, machine shops and car-making establishments all prosper. We quote Wire Rods, 120 @ 125; Steel Rails, 120 @ 128, and ditto, for Mines, 110 @ 115.—*Borsenhalle.*

EAST INDIES.

MANILA, March 11.—*Hemp.*—Our market has been quiet at \$16.25 per picul, against \$7.78 1/2 same date last year, equaling 1/2 ton, cost and freight, £52. 12/6, against £28. 15/. There cleared for the United States since last cable 7000 bales, against none last year, and since January 1 32,000, against 39,000; there remained loading for ditto 17,000, against 8000. Cleared for England since January 1, 61,000 bales, against 61,000 bales; loading for ditto, 4000, against 35,000; cleared for all other ports, 7000, against 13,000; receipts at all other ports since last cable, 12,000, against 10,000, and since January 1, 131,000, against 113,000 last year and 85,000 in 1887. Freight.—\$7.50, against \$5. Exchange, 6 months' sight, 3 3/4, against 3 3/8.—*Kerr & Co., per cable direct, to Mr. Charles Nordhaus, New York.*

COLOMBO, January 31, 1889.—*Plumbago.*—A moderate amount of activity has prevailed at following quotations, in rupees, 1/2 ton: Large Lumps, 145 @ 170; Ordinary Lumps, 125 @ 160; Chips, 80 @ 95; Dust, 40 @ 65. *Coir Yarn.*—No. 1 to 4 may be quoted 7 @ 12 rupees 1/2 cwt. Following are the shipments of *Plumbago* since October 1: To England, 28,280 cwt.; to Hamburg, 4419; to Antwerp, 2806; to Bremen, 456; to India, 21; to Australia, 88, and to the United States, 35,038; together, 71,108, against 104,220 in 1888; 53,072 in 1887 and 64,550 in 1886. Exchange.—We quote 6 months' sight 1 1/2-16d.—*Walker Brothers, through their agent, Mr. John W. Greene, New York.*

PENANG, February 15, 1889.—*Tin.*—Receipts for the fortnight amounted to 10,500 piculs, of which Europeans took 8000, while Chinese bought the balance and 1500 piculs besides. The market opened at \$36.50 per picul, advancing yesterday to \$37.40, but to-day there are no buyers.—*Schmidt, Kustermann & Co.*

HOLLAND.

ROTTERDAM, March 7, 1889.—*Tin.*—Since the beginning of the month but a light trade has been done, at 57.75 @ 58 Banca, spot; Billiton, do. at 50 @ 57.50, and the latter to arrive 57.50 @ 57.75. The following statement shows the position of Banca Tin in Holland on February 28, from the official returns published by the Dutch Trading Company:

	1889.	1888.	1887.
Import in February, slabs.....	11,700	13,001	13,171
Total, two months, slabs.....	26,700	36,400	25,670
Deliveries in February, slabs.....	13,790	5,500	12,260
Total, two months, slabs.....	21,740	10,700	27,155
Stock, second hand, slabs.....	29,150	30,809	18,526
Unsold stock, slabs.....	141,071	86,746	56,595
Total stock.....	170,221	117,555	75,121
Afloat, piculs.....	4,000	6,400	3,500

	1889.	1888.	1887.
Import in February, slabs.....	1,940	18,523	7,400
Total, two months, slabs.....	5,238	24,023	18,737
Deliveries in February, slabs.....	7,305	2,900	7,363
Total, two months, slabs.....	11,740	9,933	15,433
Stock, slabs.....	12,798	30,218	25,025
Afloat, piculs.....	27,500	20,500	16,500
Quotation, February 28—Banca.....	f 58	f 103	f 61 1/4
Billiton.....	f 58	f 100	f 61

—*De Monchy & Havelaar.*

The annual meeting of the stockholders of the Virginia Coal and Iron Company was held at the Exchange Hotel, Richmond, Va., on Tuesday, the 12th inst. The company own about 65,000 acres of valuable coal lands in Wise County, immediately north of Big Stone Gap, and large tracts of iron land in Scott and Lee counties. The following are among the stockholders and officers of the company: E. B. Leisenring, Dr. J. S. Wentz, S. B. Price, A. W. Leisenring, Daniel Bertch and M. S. Kemmerer, Mauch Chunk, Pa.; Dr. George Wentz, Jeddo, Pa.; Samuel Thomas, Catasauqua, Pa.; T. A. Dodson, George H. Myers, Bethlehem, Pa.; W. W. Watson, Scranton, Pa.; G. W. Mullin and J. O. Tomber, Philadelphia.

The Ellis & Lessig Steel and Iron Company, of Pottstown, Pa., manufacturers of cut nails, have broken ground for 12 additional puddling furnaces. The contract for the castings, amounting to about 150 tons, has been given to the Colebrookdale Iron Company, of Pottstown.

The Reading Settlement.

The following is the full text of the plan of the settlement of the Reading Iron Company:

It will not be practicable to make any cash payment if the works are to be kept going and the business continued. The company will have no credit and cannot therefore borrow working capital; the values represented by merchandise, stock and materials will be required in the future conduct of the business. The depreciation in the value of the plant in the event of liquidation will be so great that the creditors will be better off to reorganize the company and keep it a "going concern" under prudent and economical management than to convert the personal property into cash and distribute the proceeds. The practical questions, therefore, are to devise measures to give the creditors the best possible securities, to enable them to maintain their credit and carry the notes discounted in bank, to enable them to realize the largest possible amount on their claims.

The real estate and plant are valued on the books at \$1,838,050.58 as a "going concern." They have been appraised by the creditors' committee at \$1,558,450, but if sold under liquidation would bring very little in excess of liens.

There is a mortgage of \$600,000, 6 per cent., 30 years, on the plant. If the whole debt, say \$1,300,000, were funded in a second mortgage, the bonds would command a low price. It will be better to issue, say, 40 per cent. of second mortgage 6 per cent. bonds, and a third mortgage of 60 per cent., \$780,000, interest payable if earned at the rate of 6 per cent., with a sinking fund into which surplus net earnings shall be paid.

Settle and adjust with all creditors whose claims are less than \$1000 by the payment of 60 per cent. cash. This will reduce floating debt to \$1,300,000.

Adjust this \$1,300,000 by 40 per cent., second mortgage bonds, 6 per cent., \$520,000, and 60 per cent., third mortgage, \$780,000. The third mortgage bonds to be entitled to 6 per cent, if earned, and all net earnings after the payment of fixed charges and interest on third mortgage.

(A) Interest on first mortgage.....	\$36,000
(B) Sinking fund first mortgage.....	9,000
(C) Interest on second mortgage.....	31,200
(D) Interest on third mortgage.....	46,800

Total \$123,000, to be paid into the sinking fund of third mortgage, to be invested by trustee of the mortgage in purchase of third mortgage bonds at market price, not exceeding par, and with usual sinking-fund clauses regulating investment. If bonds can be purchased cancel common stock and issue deferred stock, cancel preferred stock and issue common stock in lieu.

The holders of deferred stock to deposit their stock with the trustee of third mortgage, with voting power to said trustee. The trustee to vote the stock as requested by a majority of holders of second and third mortgage bonds.

NOTE.—In lieu of third mortgage 5 per cent. perfection stock could be issued, but the third mortgage is the better security and will be more acceptable as a collateral.

A new catalogue of the E. W. Bliss Company, Brooklyn, has just made its appearance. This is the eighth edition put out by this firm and in many respects is an improvement over anything that has preceded it. Folded plates are avoided, and yet the various machines are shown in a way to meet every requirement. The volume in size measures 5 x 7 1/4 inches. It is bound in cloth with gilt side and back titles, with embossed monogram on the last page of cover. It contains no less than 263 pages. The engravings are clear and distinct; the letter-press is terse and

appropriate, and the price lists are arranged in such a form as to afford every necessary feature of information. Many new tools and machines are shown, and the sheet-metal worker will find it difficult to secure so much information in compact form in any other direction as is shown in this book, and yet the list of illustrations is by no means exhaustive. One thing to be specially noticed is the advance being made in the designing of machinery. Types of presses which have been familiar to the manufacturing public for many years past are no longer seen in this volume. Instead new styles and designs have taken their places, of better construction and greater convenience, indicating that this establishment is keenly alive to the rapid advance of the day, and is keeping its friends and customers in the front ranks of progress. The volume is one that should have large circulation and should be preserved for reference in the library of every mechanic and manufacturer.

Business Methods.

The form of remittance which was published in our issue of January 17 has called out an interesting letter from the firm of E. D. Ransom & Co., dealers in molding sand, foundry facings and founders' supplies, at Albany, N. Y. In it they inclose a form of remittance which they are employing and which they state is very convenient for the purpose. With the exception of an ornamental corner-piece the form is as follows, the blank spaces being filled in to show its practical utility:

ALBANY, N. Y., February 23, 1889.

MESSRS. JONES & Co.

Dear Sirs:

We inclose Check No. 2730, for four hundred dollars, in settlement of account as below.

Please acknowledge same.

Yours truly,

E. D. RANSOM & Co.

Dec.	2	9	Mdse.	\$300 00	\$500 00
Jan.	10	20	Cr. Allowance. Frt. and Dis.	50 00	100 00
				50 00	400 00
			(Receipt and Return.)		

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Received of E. D. RANSOM & Co.,

.....Dollars,

in settlement of account as above.

\$.....

The lines at the bottom are to be filled in by the persons receiving the money, their signature attached in proper place, and the entire form then returned to those making the payment.

Clark Bros., Belmont, N. Y., announce that their machine shops and foundry were destroyed by fire Saturday evening, the 16th inst. Their patterns, drawings, jigs, templets, special tools and a large quantity of their stock in process of construction was saved from the fire, and they have made arrangements temporarily for occupying and carrying on their business at the large foundry and machine shop of the Rawson Mfg. Company, which is referred to as splendidly equipped with all necessary machinery and tools, so that they can fill all orders promptly.

A patent has just been granted to James A. Burden, of Troy, on a magnetic ore-separator.

Hardware.

The trade for the past week has not been up to expectations, and some complaint is made by merchants and manufacturers that goods are being purchased in comparatively small quantities, the trade throughout the country manifesting a disposition to defer their orders. The volume of business is, however, fair, and it is expected that with the progress of the season there will be a satisfactory trade. Prices remain substantially unchanged.

Barb Wire.

The New York market presents no new features of importance, the demand being only fair, but prices are without change.

The recent circular of Washburn & Moen Mfg. Company and I. L. Ellwood & Co. refers at some length to Barb Wire litigation. With reference to its general features they say:

We desire the trade to understand distinctly that, with three or four exceptions, every Barbed Fence Wire manufacturer in the United States, between 40 and 50 in number, are our licensees, the infringers being all under suit. Practically but one decision has been rendered against us by a United States District Judge—in the northern part of Iowa, an appeal from which was promptly taken to the Supreme Court of the United States—and concerns but a limited portion of a single State, where no unlicensed Wire is now being manufactured. Again, this decision concerns but one patent out of the 250 odd which we own on Barbed Wire and the machinery for making same. That decision, moreover, was rendered some 13 months ago, where, but two months since, we had no difficulty in obtaining an injunction in the United States Court against certain parties in Joliet, of this State, to restrain them from manufacturing Glidden Wire, which they had not been authorized by us to manufacture.

Referring to their litigation with the Braddock Wire Company and the St. Louis Wire Mill Company and parties handling unlicensed Wire, the circular says:

In May, 1888, we filed a bill for an infringement of our patents, among which was the principal Glidden patent, sustained by Judge Brewer against the Braddock Wire Company. The defendants interposed delays and refused to answer until October 1, 1888. In October and November, 1888, we took our entire testimony, 165 printed pages, and filed the same on record, and since that time the Braddock Wire Company has not taken a line of testimony or made a single defense, and an injunction and decree will go against them by default at the next term of that court unless they now beg leave of court so to do. The record of the United States Court at Pittsburgh will show this fact.

In April, 1888, we filed a bill against the St. Louis Wire Mill Company, in the United States Circuit Court for the Southern District of Illinois, for an infringement of the Glidden patent, heretofore sustained by Circuit Judge Brewer, and being the patent referred to by District Judge Shiras. The St. Louis Wire Mill Company filed answer in May in that case, and also filed a lot of affidavits, alleging the great damage to their business by suits brought by us on the Glidden patent, and letters and circulars written by us, and asking for an injunction against us restraining the bringing of suits, writing letters, issuing circulars, &c., against infringing dealers and consumers of Barbed Wire. Of course this injunction was not granted. In July and August, 1888, we took extensive testimony and closed our proof in that case. Not a line of testimony has been taken by the St. Louis Wire Mill Company, or a defense put in in that case either; we shall obtain an injunction and decree against the St. Louis Company at the next term of court unless the company by pleading and begging and affidavits obtain the time to put in some defense.

In addition to the number of suits which we are prosecuting as vigorously as the law will allow against the very few parties who are venturing to manufacture unlicensed Barbed Wire, we have recently instituted suits against the Van Camp Hardware and Iron Company, Indianapolis, Ind.; Low & Woodruff, Chicago agents for the Braddock Wire Company; The Hazen Company, Cincinnati agents for the same company; Pappenheimer Hardware Company, jobbers at Cincinnati, who are selling the same make, and are collecting evidence against a number of jobbers and dealers, which, when completed, will lead to suits.

Wire Nails.

There is a fair amount of business in Standard Wire Nails, which are coming into constantly increasing use. The extreme prices which are made are unquestionably below cost, and some of the manufacturers are refusing to meet them.

Cut Nails.

While the volume of business continues quite satisfactory in Cut Nails, prices are still somewhat unsettled and decidedly unremunerative. We continue to quote standard quality Iron Nails, carload lots; \$1.80 to \$1.85, and small lots, \$1.90 to \$1.95.

The regular monthly meeting of the Western Cut Nail Manufacturers' Association was held in the office of the Benwood Iron Works, Wheeling, W. Va., on Wednesday, the 13th inst., about one-half of the firms being represented. Nothing but routine business was transacted. No change was made in the card rate.

Clothes Wringers.

The manufacturers of Clothes Wringers have adopted a new list, which is given below. It will be observed that this list is not now printed \$2.50 or \$3 per dozen higher than the price of the goods to the trade, as heretofore, but that it is printed net 60 days, subject to 2 per cent. discount for cash in 10 days. This change will commend itself to the convenience and judgment of the trade. Change has also been made in the matter of freights and deliveries, by which buyers of jobbing quantities will receive an allowance on

Names and numbers.	Size of roll.		
	Length, inches.	Diam., inches.	Wholesale prices, per dozen.
Superior Wringers, Iron Frame and Steel Springs:			
No. 2, Small Family Size...	10	1 3/4	\$18.50
No. 3, Medium Family Size...	11	1 3/4	23.00
No. 4, Large Family Size...	12	1 3/4	28.00
Novelty Wringers, with Curved Clamp:			
No. 2, Small Family Size...	10	1 3/4	23.50
No. 3, Medium Family Size...	11	1 3/4	28.00
No. 4, Large Family Size...	12	1 3/4	33.00
No. 22, Large Family Size...	10	2	33.00
No. 33, Ex. Large Family Size...	11	2	42.00
No. 44, Small Hotel Size...	12	2 1/2	52.00
Novelty Wringers, with Straight Clamp:			
No. 2 1/2, Small Family Size...	10	1 3/4	23.50
No. 3 1/2, Medium Family Size...	11	1 3/4	28.00
No. 4 1/2, Large Family Size...	12	1 3/4	33.00
No. 22 1/2, Large Family Size...	10	2	33.00
No. 33 1/2, Ex. Large Family Size...	11	2	42.00
No. 44 1/2, Small Hotel Size...	12	2 1/2	52.00
Novelty Wringers, New Style:			
No. 10, Small Family Size...	10	1 3/4	23.50
No. 11, Medium Family Size...	11	1 3/4	28.00
No. 12, Large Family Size...	12	1 3/4	33.00
Excelsior Wringers, with Folding Bench:			
No. A, Small Family Size...	10	1 3/4	42.50
No. B, Medium Family Size...	11	1 3/4	47.00
No. C, Large Family Size...	12	1 3/4	52.00
No. AA, Large Family Size...	10	2	52.00
No. BB, Ex. Large Family Size...	11	2	62.00
No. CC, Small Hotel Size...	12	2 1/2	71.00
Excelsior Wringers, for Stationary Tube:			
No. E, Small Family Size...	10	1 3/4	33.50
No. F, Medium Family Size...	11	1 3/4	38.00
No. G, Large Family Size...	12	1 3/4	43.00
No. EE, Large Family Size...	10	2	43.00
No. FF, Ex. Large Family Size...	11	2	52.00
No. GG, Small Hotel Size...	12	2 1/2	62.00
Excelsior Wringers, Laundry and Factory:			
No. H, Medium Hotel Size...	12	2 1/4	99.00
No. HH, Large Hotel Size...	14	2 1/2	126.00
No. JJ, Laundry or Factory...	16	3	261.00
No. KK, Laundry or Factory...	18	3 1/2	351.00
No. 00, Laundry or Factory...	14	4 1/2	441.00
No. 000, Laundry or Factory...	18	5 1/2	987.00

shipments to equalize freights with the factory nearest the purchaser to whom such allowance is made. By this arrangement a house in the West, for example, buying goods from an Eastern manufacturer will hereafter have to pay only what the freight would be from the Western factory located nearest to them, instead

of paying the freight from the Eastern factory, as formerly. The following are points covered by the arrangement in regard to the equalization of freights: Boston, Mass., Woonsocket, R. I., Middlefield, Conn., Auburn, N. Y., Philadelphia, Pa., Erie, Pa., Cleveland, Ohio, and Cincinnati, Ohio.

The change in list as made by the Empire Wringer Company, Auburn, N. Y., applies only to the Daisy and Volunteer Wringers, the Empire Wringers remaining at the same prices and terms as heretofore.

The foregoing is the revised price list of the Bailey Wringing Machine Company, Woonsocket, R. I., which represents also the list prices of other manufacturers. Terms, 60 days, 2 per cent. discount for cash in 10 days.

Items.

The American Buckle and Cartridge Company, West Haven, Conn., for whom the Alford & Berkele Company, 77 Chambers street, New York, are agents, have decided to go into the business of loading Shells and will be ready to deliver the goods about the middle of June or first of July next. This step is taken in view of the fact that the sale of loaded Shells is increasing, while the sale of unloaded Shells is correspondingly decreasing. We are advised that the company have ample facilities for this new departure, and with their I X L and special brands of Shells they are in a position to make this addition to their line in such a way as to meet the varied requirements of the trade.

Gibson, Parish & Co., dealers in Cabinet Hardware, who were recently burnt out at 78 and 80 Randolph street, Chicago, have established temporary quarters at 82 Lake street and re-engaged in business. They may return to their old location after the building is re-erected.

H. H. & C. L. Munger, 142 Lake street, Chicago, have increased the line of Fauber's Electric-Action Bells by adding 3 1/2-inch Plain Gong, nickel-plated, 3 1/2-inch Bell Metal Gong, nickel-plated, and 3 1/2-inch Bell Metal Gong, polished, which are numbered respectively, 031, 032 and 033.

The wholesale catalogue issued by Thos. H. Chubb, Post Mills, Vt., represents in attractive style his line of Fishing Tackle, special attention being given to Fishing Rods, the manufacture of which is made a specialty. Mr. Chubb alludes to his excellent facilities and his experience of 20 years in this business as putting him in a position to offer superior goods at favorable prices. The list represents a large variety of Rods, Reels, Flies, Hooks and miscellaneous Fishing Tackle specialties.

By an error, which from the prominent position occupied by the house was probably recognized by most of our readers, the location of the C. W. Hackett Hardware Company, successors to the Strong-Hackett Hardware Company, was in the paragraph in our last issue relating to the change in style, given as Minneapolis instead of St. Paul, Minn.

It will be observed that among the Special Notices on page 50 is one relating to a wholesale and retail Hardware business of 40 years' standing, in a centrally located city. The sales are given as \$300,000, the stock amounting to \$45,000.

The Eagle Pencil Company, 73 Franklin street, New York, issue circulars calling attention to some of their recent novelties. One of these is their Enigma Pencil, in which the lead takes its proper projection for writing whenever the point is turned downward, and on returning the Pencil to the pocket, point upward, the lead drops in automatically. As the lead wears off, by means of a knob at the end of the Pencil it is adjusted to the desired

length. A new lead can be inserted by unscrewing the tip and placing the lead in its carrier. They also issue a circular describing the Matchless Compass and Combined Pencil and Compass, so constructed that when not required for use it can be easily carried in the vest pocket, occupying no more room than the ordinary Lead Pencil, while at the same time the points are concealed, so that no damage may be done to the clothing. It is described as made of the best nickel, carefully manufactured and of superior finish.

On page 50 Haydock & Bissell, the Hardware Auctioneers, announce on March 26 and 27, an important sale of Table and Pocket Cutlery; on March 28 a large trade-sale of Hardware, and on March 29 a special sale of House-Furnishing Goods, Brushes, &c., at their rooms, 12 Murray street and 15 Park Place. Particulars in regard to this sale are given in their advertisement, and it will be seen that the opportunity is deserving the attention of buyers.

Geo. D. Winchell Mfg. Company, Cincinnati, Ohio, issue a circular showing their line of Imperial Water Coolers, the different patterns of which are illustrated with some new designs. The Gate City Stone Filter is also represented.

B. G. Farrar & Co., St. Louis, Mo., issue a circular relating to their patent Adjustable Buggy and Wagon Wrenches and Common Sense Buggy and Wagon Jacks, giving illustrations and list prices and pointing out their advantages.

In their advertisement on page 72 Peabody & Parks, Troy, N. Y., illustrate the Farmers' Favorite Potato Bug Exterminator, of which they are manufacturers. This machine is for dusting plaster, Paris green, phosphates, &c., and its simplicity, durability and satisfactory working are points made in regard to it.

The Cleveland Stone Company, Cleveland, Ohio, have been appointed agents by the Pike Mfg. Company, Pike Station, N. H., for the sale of their domestic and imported Scythe Stones, Washita, Arkansas, Hindostan and Turkey Oil Stones, &c., and have opened a branch office at 51 Chambers street, New York.

Bennett & Shirk, 112 and 114 Lake street, Chicago, selling managers of the North Star Refrigerators, manufactured by the Indiana Mfg. Company, of Peru, Ind., have just issued an illustrated and descriptive catalogue. Various styles of hardwood Refrigerators are shown, embracing small sized upright, large sized family or restaurant single door large sized double door, front door to ice chamber, four door, Sideboards, Sideboard and Cabinet combined, plain finished, and Ice Chests. The high-class Refrigerators are all finished in antique. The Sideboards are made of solid quartered oak, antique finish, or walnut, hand carved, inlaid with ebony and cherry, have embossed mosaic panels, beveled French plate mirrors, special water cooler, and complete in every other respect. All the upright Refrigerators are lined with felt throughout, including the lids. A recent test of one was made in a steam drying room heated to 165°. It was left there for eight hours, in which time two gallons of water were formed by the melting ice, and when taken out the inside temperature was 48°, which was a very creditable performance. It is claimed that in this Refrigerator perfect circulation of cold air is secured through the linings of the walls, as also through the linings of the doors and lids, in which suitable openings have been made.

James D. Frary, Meriden, Conn., is putting on the market a very interesting and complete line of Lemon Squeezers, Cork-

screws and other specialties. On page 453 of this issue a description is given of the Seaside Lemon Press and Strainer, a new article, to the convenience and efficiency of which attention is called. Emphasis is laid upon the fact that in Nos. 162 and 182 the parts of the press which come in contact with the lemon-juice are lined with pure britannia metal. The catalogue exhibits an exceptionally complete line of Corkscrews, many of which are of new design and are combined with other tools, such as Can Openers, Picks, &c. Other specialties are also illustrated.

Hibbard, Spencer, Bartlett & Co., of Chicago, finding their present spacious quarters too small to accommodate their increasing business, have secured two additional buildings adjoining their stores on the east and will occupy them after the 1st of May. These buildings are each five stories high, 24 feet wide and 140 feet deep. The company's block will then be 160 feet long by 140 feet deep, leaving but one 24 foot building between it and an alley on the east. Their numbers on Lake street will run from 18 to 32 inclusive. This increased space will add greatly to the convenience of the firm. One of the new buildings will be used for their new Lamp Department, which will hereafter cover not only a full line of Lamps, but everything pertaining to the Lamp business. In the line of present trade the firm states that they are doing a large business thus early in the season in Ice-Cream Freezers. They handle the Lightning Freezer made by the Shepard Hardware Company, which was brought out late last year. They have also added to their stock the Jewett line of Filters, for which an active inquiry is developing in sections afflicted with impure water.

Walbridge & Co., Buffalo, N. Y., have issued a very convenient catalogue of Tinware and House-Furnishing Goods, of which they have made a judicious selection. Illustrations are given of leading goods and many specialties, the cuts being small, yet clear and satisfactory, and representing the goods attractively. The numbers, sizes, &c., of the different articles are given, but the list prices are omitted, with an intimation in the opening circular that a full list of prices, following the catalogue page by page, will be mailed on application.

Maynard's Socket Garden Trowels, described on page 453 and put on the market by Robert Murray, 24 Duane street, New York, are sold from the following list, which is subject to a discount of 20 per cent.:

5	6	7	8 inch.
\$4.50	\$4.50	\$5.00	\$5.50 per dozen.

Tucker & Dorsey Mfg. Company and Phoenix Caster Company, both of Indianapolis, Ind., have issued illustrated catalogues jointly under one cover. The line of Alarm Tills, Stove Trucks, Slew Cutters and miscellaneous household specialties made by the Tucker and Dorsey Mfg. Company, and Martin's Patent Casters, made by the Phoenix Caster Company, are conveniently and effectively represented. The large and important line of Casters are represented in full-size cuts, and the more recent additions to the assortment shown. In regard to these two companies, it may be stated that the business of both is transacted from one office under the management of the same officers, although the companies are separate and distinct in other respects.

William Shimer, Son & Co., Freemansburg, Pa., issue an illustrated catalogue and price list showing the specialties in Hardware and House-Furnishing Goods of which they are manufacturers. Among these are represented the Keystone Saws, Irons, including those with detachable

wood handles and the regular goods, a large variety of Chest Handles, Bolts, Scales, Shelf Brackets, Hooks, Cast Nail Hammers, Stove Lifters, Match Safes, Garden Tools, &c. The Royal Washing Machine is also prominently represented.

The extent of the assortment carried by the house of Scott, Stevens & Co., Paducah, Ky., is referred to in a recent issue of the *Daily News*, of that city, their two three-story buildings being alluded to as stocked with a large variety of goods in the line of Hardware, Iron, Stoves, &c.

The *Humboldt Mechanic*, Eureka, Cal., illustrates the enterprise of E. Janssen & Co., to whose varied stock attention is prominently called, reference being made to many of the different lines of goods carried by them, in which Tools have a prominent place.

Office Salesmen.

A writer in a recent issue of *The Office*, discussing the treatment of customers who call on the home concern as contrasted with the treatment of those who are regularly visited by the traveling salesmen of the house, presents the following:

It has seemed to me, for some time past, that the matter of office salesmen in business houses is, in a great measure, a neglected subject. A merchant will use his utmost endeavors to secure the services of gilt-edged road men, and, having obtained his traveler, after much time, labor and skillful maneuvering, he will sit quietly in his chair expecting the man on the road to bring in the business. Such management puts the office in the position of a clearing-house, not of a live, active factor in the business transacted. Is this a proper way to conduct any business office? Frequently I have had occasion to enter large establishments where, on opening the door, a wilderness of goods greeted me, but no human face. Sometimes I have gone a distance of from 100 to 200 feet into a large city warehouse, and finally run against the office partition at the lower end, where a hard-worked bookkeeper, trying to find his balance, glared at me through the cashier's pigeon-hole, and in crusty tones asked, "What do you want?" That this is not an unusual case, nor an overdrawn picture, any man who has had occasion to enter large wholesale houses in New York and other cities can testify.

There are, however, some brilliant and shining exceptions to the rule. Of one case, a wholesale house in New York, I can speak from pleasant experience. At the head of the entrance stairs sits one of the partners of the concern. It is, of course, impossible for him to see every man who comes in, but every man who does come in is met at the top of the stairs by a clerk of pleasing address, who inquires his business. He is then referred to some salesman, who is instantly at his service. Should the visitor happen to be a large buyer in this particular line of goods, he is referred at once to the salesman partner already mentioned. This man was given an interest in the house, originally, on account of the immense amount of goods he could dispose of on the road. But does the ex-road salesman and present partner greet the visitor who has come in, perhaps, only to make a friendly call, with a curt, "What do you want?" Not so, at all. A hearty grasp of the hand, and "How are you?" uttered in whole-souled, magnetic tones, an inquiry as to the health of his family, and these various little incidentals that mean practically nothing, and yet are fraught with so much goodwill and interest to a man, and which seem to oil the wheels of business, are features of the greeting.

What is the result of this plan of action? Profitable business, of course. The house referred to, which, by the way, makes a

study of handling customers, whoever and wherever they may be, does the largest business in its line in the United States. It is a model for all other houses to copy after in each of its various departments. I offer these few remarks as a suggestion to the business houses that are in the habit of treating the incoming buyer almost as if he were a Pariah to be shunned, or, if attended to at all, who consider it enough that he is looked after by a junior clerk, whose ideas of business are at best nebulous. If a merchant wishes trade, and is paying much money to outside salesmen to bring it in, it seems but simple common sense to take care of it most carefully when it comes in of its own accord. Office salesmen should be provided and trained as well as road salesmen.

Exports.

PER SHIP SEA KING, MARCH 7, 1889, FOR SYDNEY, N. S. W.

By Arkell & Douglas.—324 dozen Handles, 140 dozen Axes, 1/2 dozen Guns, 1300 feet Wire Cloth, 1 gross Wire Goods, 2 dozen Wringers, 1 dozen Lawn Sprinklers, 10 dozen Forks, 1 gross Egg Beaters, 9 dozen Wrenches, 1 dozen Wringers, 4 dozen Shears, 672 pounds Oil Stones, 1500 feet Hose, 1260 pounds Bolts, 30 cases Ranges, 12 dozen Door Springs, 8 cases Nails, 30 boxes Clothes Pins, 50 dozen Handles, 3 dozen Handles, 5 dozen Door Springs, 1 1/2 dozen Braces, 15 dozen Hatchets, 1 1/2 dozen Shellers, 32 Clocks, 2 gross Shade Rollers, 1 case Pumps, 2 cases Wrenches, 2 dozen Rakes, 1/2 dozen Wringers, 12 dozen Lampware, 1 case Saws, 76 dozen Brooms, 4 cases Hardware, 4 gross Blacking, 2 packages Plated-Ware, 2 cases Door Knobs, 1/2 dozen Ladders, 1 dozen Levels, 50 dozen Washboards, 100 boxes Clothes Pins, 3 dozen Corn Mills, 2 boxes Saws, 1 box Wire Goods, 3 boxes Bells, 1 case Saw Sets, 600 feet Hose, 6 dozen Braces, 1 gross Blacking, 1 barrel Hose, 44 Guns, 57 sets Tools, 7 packages Hardware, 40,000 Primers, 30,000 Cartridges, 5 dozen Axes, 2 cases Varnish, 1 case Bolts.

By McLean Bros. & Rigg.—18 dozen Hoes, 68 dozen Handles, 7 dozen Braces, 54 dozen Axes, 10 dozen Plumbs and Levels, 13 sets Axes, 4400 Bolts, 7 dozen Braces, 18 Stoves, 30 Plows, 34 dozen Saws, 6 dozen Wrenches, 56 Guns, &c., 18 Visers, &c., 12 Scales, 24 dozen Padlocks, 12 dozen Hammers, 320 Handles.

By A. S. Lascelles & Co.—5 gross Axle Grease, 1 gross Handles, 3 dozen Saw Sets, 9 dozen Vises, 5 cases Cartridges, 55 dozen Axes, 6 dozen Picks, 10 dozen Axes, 100 boxes Clothes Pins, 33 dozen Saws, 20 dozen Axes, 1 case Broom Handles, 6 dozen Choppers, 10 gross Sewing Machine Oil, 1 case Tools, 5 dozen Braces, 2 cases Squares, 3 dozen Braces, 1/2 gross Hammers, 72 pounds Tacks, 2 1/2 dozen Brackets, 1 case Tools, 25 dozen Washboards, 2 dozen Levels, 6 dozen Axes, 28 dozen Hatchets, 1 dozen Foot-Scrapers, 3 cases Brackets, 2 cases Broom Racks, 2 cases Perambulators.

By R. W. Forbes & Son.—1 case Hardware, 1 dozen Cow Bells, 1 dozen Wrenches, 1/2 dozen Hay Knives, 2 dozen Braces, 18 sets Sad Irons, 3 sets Harness, 20 cases Sewing Machines, 17 dozen Fork Handles.

By V. Basanta.—171 dozen Locks and Keys, 10 Stoves, 26 dozen Lamp Goods, 4 dozen Egg-Beaters, 12 dozen Perambulators, 6 dozen Mouse Traps, 25 dozen Hatchets, 3 dozen Toy Wagons, 10 dozen Perambulators, 53 dozen Saws, &c., 11 1/2 dozen Barbers' Shears, 15 gross Blind Rollers, 1 1/2 dozen Stoves, 5 dozen Clocks, 100 gross Lamp Wicks, 1 dozen Lanterns, 26 dozen Lamp Goods.

By Strong & Trowbridge.—16 cases Hatchets, 1 case Hammers, 1 package Tools, 6 cases Hatchets, 6 cases Bolts, 1 case Hoes, 6 cases Hatchets, 2 cases Wrenches, 2 cases Hardware, 3 cases Hammers, 10 cases Hammers, 1 case Tools, 6 packages Castings, 1 case Nails, 1 case Pulleys, 1 case Tools, 1 case Lampware, 6 cases Tools, 1 case Hardware, 1 case Brass Goods, 2 cases Tools.

By Arnold, Cheney & Co.—89 cases Handles, 1 crate Wheels, 3 crates Wheels, 5 Iron Castings, 14 cases Axes, 4 cases Saddlery, 6 cases Saddlery, 63,668 pieces Roofing Slate, 200 dozen Brooms.

By Morris, Strouse & Co.—79 dozen Axes.

By W. E. Peck.—3 cases Hardware, 2 dozen Churns, 9 dozen Hay Forks, 1 dozen Wheelbarrows, 1 case Call and Door Bells, 2 1/2 gross Mouse Traps.

By F. B. Wheeler & Co.—18 cases Skates, 4 cases Rubber Goods, 12 dozen sets Sad Irons, 5775 pounds Castings, 63 sets Harness, 25 dozen Axes, 36 sets Harness.

By W. K. Freeman.—102 pounds drills, 42 dozen Handled Axes, 6 cases Lamps, 6 packages Hardware.

By Coombs, Crosby & Eddy.—6 dozen House-Furnishing Goods, 4 dozen Lamp Goods, 20 dozen Mast Hooks, 12 1/2 dozen Tools, 11 cases Slates, 102 Stoves, 80 dozen Hatchets.

By Welsh & Lea.—21 cases Iron Bolts.

By Healy & Earl.—3 cases Saws.

By H. W. Peabody & Co.—66 packages Wind Mills, 14 cases Agricultural Implements, 6 cases Steel, 10 cases Carbons, 10,200 pounds Wire, 22,400 pounds Barb Wire.

By R. W. Cameron & Co.—3 boxes Machinery, 3000 pounds Machinery, 1370 pounds Rolling Machines, 6247 pounds Castings, 7 boxes Wheels.

By McCoy & Sanders.—1 bale Rubber.

By Waterbury Clock Company.—12 boxes Clocks.

By Winchester Repeating Arms Company.—188 pounds of Tools.

By Edward Miller & Co.—28 packages Lampware.

By S. Oppenheimer & Co.—3 cases Machinery, 47 boxes Skewers.

By Ilsley, Doubleday & Co.—24,100 pounds Bolts, 12 1/2 gross Axle Grease, 12 1/2 gross Axle Grease, 24 dozen Stencils, 1 box Paint, &c.

By A. Field & Co.—33 dozen Axes.

By Manhattan Brass Company.—20 cases Lampware.

By B. F. Avery & Sons.—2 boxes Plow Irons, 9 packages Plows.

By Collins & Co.—130 dozen Tools.

By Edward Miller & Co.—33 packages Lamp Goods, 24 packages Lamp Goods.

By Ansonia Clock Company.—32 boxes Clocks.

By Nevius & Haviland.—23 boxes Shade Rollers, 1 box Shade Rollers.

By H. L. Judd & Co.—8 packages Brass Goods.

By Simpson, Hall, Miller & Co.—7 cases Silver-Plated Ware.

By L. H. Mace & Co.—17 Refrigerators.

By W. H. Crossman & Bro.—12 Gross Fish Lines, 7 packages Carriage-Ware, 1 case Stone, 1 case Hardware, 1 case Plow Parts, 6 pairs Bolt Clippers, 2 dozen Stoves, 7 crates Hardware, 8 cases Tools, 36 cases Hardware, 2 Tire Benders, 10 dozen Glue, 34 dozen Grindstone Fixtures, 3 gross Traps, 8 cases Hardware, 500 pounds Nails, 30 dozen Handles, 9 Miter Boxes, 30 dozen Handles, 8721 pounds Iron Bolts, 3 boxes Hardware, 1500 pounds Staples, 24 dozen Lamp Goods, 6 packages Pump Parts, 3 dozen Dashers, 100 dozen Traps, 1 dozen Guns, 50,000 Primers, 1 dozen Corn Shellers, 1/2 dozen Mills, 1 dozen Store Trucks, 14 dozen Hatchets, 6 1/2 dozen Meat Choppers, 4 cases Hardware, 336 pounds Stone, 218 pounds Glue, 40 dozen Handles, 3 gross Lemon Squeezers, 40 dozen Hatchets, 1 case Hardware, 9 dozen Grindstones and Parts, 17 dozen Cages, 2 dozen Tools, 1 case Lamp Goods, 3700 pounds Iron Bolts, 3 1/2 dozen Meat Choppers, 2 1/2 dozen Corn Mills, 2 dozen Wagon Jacks, 1 dozen Stencils, 2 dozen Squares, 20 dozen Hatchets, 7 cases Hardware, 1 case Handles, 60 sets Rifle Tools, 10,000 Primers, 1 do e) Wringers, 20 dozen Axes, 40 dozen Handles, 12 dozen Lifters, 6 gross Sewing Machine Oil, 1 case Pumps, 1 dozen Hardware, 1 dozen Egg Beaters, 2 dozen Pails, 25 boxes Clothes Pins, 1 case Hardware, 2 1/2 dozen Step Ladders, 6 dozen Handles, 7 dozen Hatchets, 6 dozen Lawn Sprinklers, 15 dozen Traps, 6 1/2 dozen Clocks, 6 dozen Miter Boxes, 60 dozen Axes, 7 dozen Freezers, 2 cases Wire, 55 cases Hardware, 57 dozen Axes, 50 dozen Polish, 1 case Stencils, 42 dozen Washboards, 420 dozen Handles, 8 gross Sewing Machine Oil, 1 case Plow Parts, 16 cases Agricultural Implements, 1 case Hardware, 5 gross Mucilage, 1 case Pistols, 1372 pounds Iron Bolts, 10 packages Hardware, 3 dozen Scales, 450 pounds Nails, 3 cases Lamp Goods, 1 case Stoves, 1 case Hardware, 1 dozen Bush Hooks.

PER BARK ALICE, MARCH 11, 1889, FOR DUNEDIN, NEW ZEALAND.

By Arkell & Douglas.—1 case Hardware, 1 case Whips, 1 case Tacks, 1 case Snaps, 1 case Castings, 100 dozen Handles, 3 cases Axes, 1 case Saws, 210 pounds Bolts, 1 case Bolts and Nuts, 2 dozen Churns, 2 cases Hardware, 5 cases Axes, 1 dozen Braces, 1-6 dozen Scales, 1 box Hardware, 2 cases Pumps, 2 cases Rivets.

By H. W. Peabody & Co.—8 cases Agricultural Implements, 45 packages Hardware, 17 cases Lamp Ware, 3 cases Bolts, 25,400 pounds Barb Wire, 200 pounds Nails, 1 case Pumps, 25 dozen Brooms, 35 dozen Stone, 18 bundles Carriage-Ware, 15 packages Lawn Mowers, 19 Stoves, 4 dozen Stencil Combinations, 7 packages Hardware, 11,248 pounds Barb Wire, 2 cases Clocks, 7 cases Axes, 1100 pounds Horse Nails, 4 packages Lampware, 12 stoves, 1 case Agricultural Implements, 2 packages Plated-Ware, 1 case Clocks, 1 1/2 dozen Polish, 7 cases Agate-Ware, 8 cases Lawn Mowers, 4 packages Agricultural Implements, 1 crate Freezers, 1 case Stoves, 44,800 pounds Wire.

By R. W. Forbes & Son.—2 packages Grinders.

By Strong & Trowbridge.—3 cases Spade Handles, 6 cases School Slates, 1 case Glue, 1 case Hardware, 1 case Wire Goods, 2 cases Shovel Forks, 1 case Rakes, 10 cases Nails, 3 Cases Axes, 1 bale Leather Belting, 1 case Lampware, 1 case Carpet Sweepers, 2 cases Hardware, 1 case Rivets, 1 case Wire Goods, 1 case Spade Handles, 2 cases Lampware, 1 case Rakes, 1 case Plated-Ware, 1 case Manure Forks, 1 case Tin Rivets, 1 case Lampware, 1 case Hatchets, 1 case Tinware, 3 cases Axe Handles, 2 cases Hatchets, 1 crate Churns.

By A. Field & Co.—7 Choppers, 6 dozen Traps.

By W. K. Freeman.—15 packages Lamp Goods.

By Ansonia Clock Co.—15 boxes Clocks.

By Chas. Brewer & Co.—11,200 pounds Wire, 1 case Agricultural Implements, 4 cases Creamery Goods, 1 case Tools, 7 cases Tools, 3 cases Agricultural Implements, 8 cases Nails, 6 cases Hardware, 6 cases Hardware, 4 cases Agricultural Implements, 4 cases Stamped-Ware, 14 cases Hardware, 2 cases Grease, 3 cases Agricultural Machinery, 5 cases Nails, 1 case Pumps, 6 crates Stoves, 1 case Oil Stones.

FOR AUKLAND.

By Arkell & Douglas.—18 dozen Handles, 3 dozen Hammers, 6 dozen Hardware, 1 bale Cordage, 1 case Saws, 4 cases Hardware, 3 cases Axes, 4 packages Lampware, 4 Ranges, 1 box Hardware, 500 Broom Handles, 4 cases Varnish, 1 bale Twine, 36 dozen Handles, 5 dozen Handles, 500 Broom Handles, 23 cases Axes.

By H. W. Peabody & Co.—4 cases Agricultural Implements, 6 cases Hardware, 1 case Agricultural Implements, 1 case Carriage-Ware, 7 cases Hardware.

By R. W. Forbes & Son.—10 cases Scales, 4 crates Store Trucks, 1 case Wire Mats, 6 boxes Scales, 1014 pounds Carriage Bolts, 1 case Pistols, 1480 pounds Horse Nails, 6 dozen Lemon Squeezers, 200 boxes Clothes Pins, 5 packages Hardware, 181 pounds Horse Nails, 42 packages Hardware, 24 packages Lawn Mowers, 3 cases Shade Rollers, 111 dozen Axes, 6 cases Axle Grease, 10 cases Lawn Mowers, 70 dozen Shovel Handles, 19 packages Churns, 1324 pounds Carriage Bolts, 70 dozen Spade Handles, 8 dozen Axes, 2 packages Shellers, 9 packages Harrows, 34 dozen Handles, 51 packages Axes, 2 packages Hardware.

By Arnold, Cheney & Co.—7 dozen Sieves.

FOR AUCKLAND AND DUNEDIN.

By R. W. Cameron & Co.—3 packages Dairy Goods, 3 cases Fan Mills, 10 cases Dairy Goods, 5 packages Dairy Goods, 1 box Scales, 1 Boiler and Engine, 1 box Wheels, 1 box Speed Indicators, 21,000 Slates, 6 1/2 gross Grease, 125 dozen Brooms, 300 cases Clothes Pins, 30 dozen Handles, 3 1/2 dozen Grease, 200 cases Clothes Pins, 560 pounds Grease, 55,999 pounds Barb Wire.

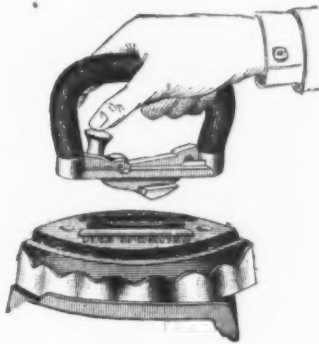
A. J. List, formerly with J. P. Withrow, of Pittsburgh, and N. J. Mitchell, recently with M. V. Smith, also of Pittsburgh, have formed a copartnership under the name of List & Mitchell, for the purpose of carrying on the engineering and contracting business in all its branches. The new firm are prepared to furnish plans and specifications for the erection of gas producers, steel plants, rolling mills, &c. They are also general agents for the S. C. Collin low-blast converter, especially adapted for small steel foundries. The temporary headquarters of the firm are in the Bissell Block, Pittsburgh. After April 1 they will be found in the Lewis Block, in that city.

The visit of two representatives of the Chicago rail manufacturers to Pittsburgh, and their conferring with H. C. Frisco, of the Edgar Thomson Works, led local proprietors to suspect that the Pittsburgh mill was to be gathered into the Chicago steel rail consolidation. We have good ground for stating that Mr. Frisco was merely called upon to appraise some coke property in the Connellsville region belonging to one of the three Chicago mills which were consolidated.

The reports that the works with which Cooper, Hewitt & Co. are identified are to be moved to the South are premature, to say the least.

A New Detachable-Handle Sad-Iron.

The sad-iron represented herewith is put on the market by the Colebrookdale Iron Company, Pottstown, Pa. The cut shows it mounted on a stand with the handle detached. The manufacturers direct special attention to the fact that the handle is made of the best selected applewood, which is referred to as exceptionally strong and durable, every handle being worked out by machinery. They also make the point that the shape of the handle is such as to permit the hand to grasp it naturally without cramping the fingers. As indicated in the illustration, the release of the handle is accomplished by pressing downward on the button shown, the handle being then readily disengaged by a backward motion. The



New Detachable-Handle Sad-Iron.

manufacturers emphasize the importance of this feature, pointing out that in other irons the handles are released by drawing upward a button, which is very near the iron, thereby exposing the fingers to burning. The irons are highly polished and put up in sets of three, with handle and stand, in labeled cardboard boxes made specially heavy and strong. This will be recognized as an interesting and important addition to their well-known line of sad-irons.

Socket Garden Trowel.

The illustration given below represents Maynard's socket garden trowel, which is put on the market by Robert Murray, sole agent, 24 Duane street, New York. It is described as made of solid cast steel in 5, 6, 7 and 8 inch sizes. It is not intended to compete with the many low-priced



Socket Garden Trowel.

trowels which are on the market, but is offered to those who desire a durable article of exceptional quality.

The Seaside Lemon Press and Strainer.

This article is put on the market by James D. Frary, Meriden, Conn., for whom it is manufactured by the Meriden Malleable Iron Company. Fig. 1 represents it applied to table and in use, and Fig. 2 shows the strainer and plate, on the top of which the lemon is to be operated upon is placed. The special features of the press and strainer and the manner of its use are thus clearly indicated, the pressure on the lemon being exerted by means of the handle or lever with a rack

and pinion movement, thus giving all requisite force, and producing, according to the claim of the manufacturer, one-third more juice than other squeezers on the market. By means of the plate and strainer, Fig. 2, the pulp and seed are

the strainer and the plunger are accordingly lined with pure britannia metal, which is referred to as free from lead or poisonous ingredients and proof against lemon juice. It is stated that by constant use without cleaning the metal will grow dark, and it is recommended that it should be cleaned as often as once a week by using common white sand or sapolio, thus keeping it clean and white. The metal is referred to as of suitable thickness, so that it can be scoured daily for years and not wear through. It will thus be seen that the well-founded objection to the use of galvanized-iron lemon squeezers is satisfactorily met. The different parts of this

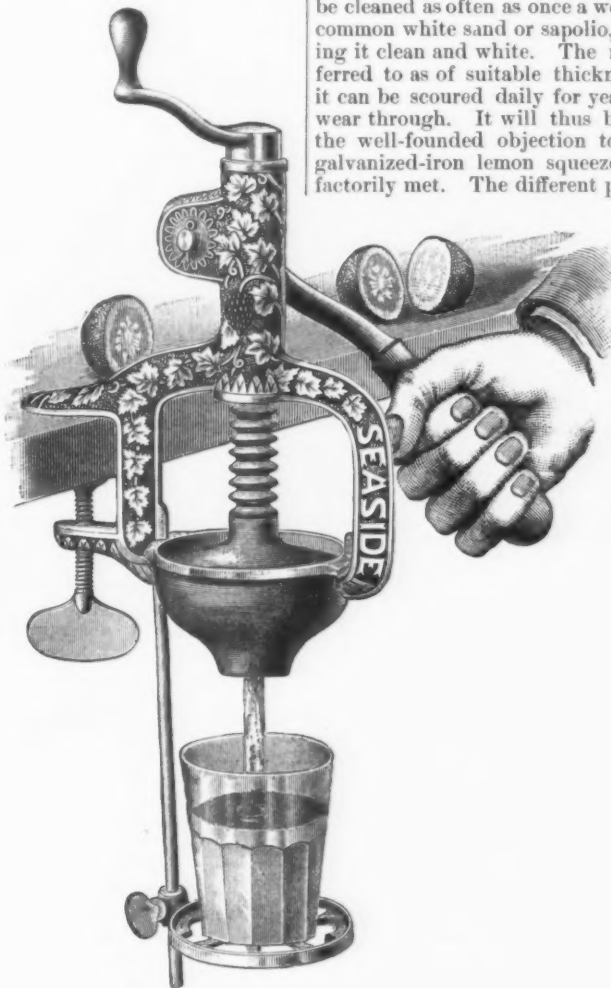


Fig. 1.—The Seaside Lemon Press and Strainer.

prevented from escaping with the juice. The arrangement by which the receptacle for the juice is held in position will be observed, and it is to be noticed that it is adjustable to any desired height. The cup in which the lemon is placed is easily removable so as to permit its convenient cleaning, and the strainer also, which is

article are furnished separately if desired, so that in case of damage it can easily be replaced. Besides the utility of this article and its efficiency and convenience for the purpose for which it is made, the elegant finish and attractiveness are also alluded to.

Buffalo vies with other lake cities in the effort to attract the ore trade, and improved docks are to be erected during the coming season. Recently the Lackawanna contracted with the Excelsior Iron Works Company, of Cleveland, for a complete plant of Thornberg patent derricks, six in number. They will be put in at the foot of Erie street, and will be used for the transferring iron ore from vessels to cars.



Fig. 2.—Plate and Strainer.

The work will be finished by May 1. A dispatch says: "With Ohio ironmen coming here to establish blast furnaces, and the extensive preparations making to handle large quantities of ore, it looks as if Buffalo would soon take the place in the iron trade that many observers believe to be hers by right of position as a natural receiving and shipping point."

Chandler & Washburn's Quick-Action Vises.

A vise embodying new features, intended for the use of pattern-makers and wood-workers in general, is represented in the accompanying illustration, and manufactured by Chandler & Washburn, 30 Kilby street, Boston, Mass. In this vise the nut is whole, drilled and tapped to fit a long screw. When the handle is in an

Twenty-five broke on striking a moderate blow. Yet all had been accepted and paid for previous to the agitation caused by the Parliamentary Investigating Committee.

Hay Knife.

G. & M. Nolin, Skowhegan, Me., are putting on the market the hay knife represented in the accompanying illustration,

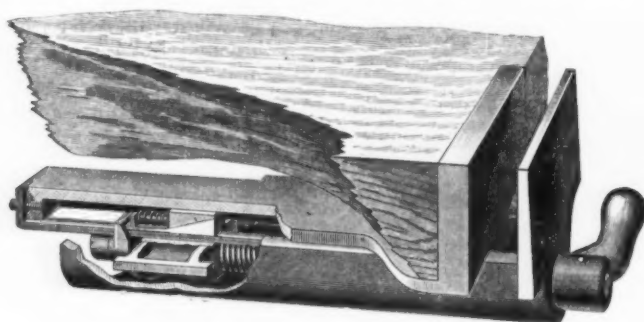


Fig. 1.—Chandler & Washburn's Quick-Action Vise.

upright position and carried as far to the left as possible, this nut is released from the back jaw, or, more strictly, released from the long flat rod fastened to the back jaw. The front jaw is then free to slide, and the nut and screw move with it. When it has been brought up to the work by turning the handle to the right about a quarter turn the nut is clamped to the rod, and if the handle is still turned to the right the nut remains stationary, and the screw works through it until the desired amount of compression is obtained. With this construction it will be seen that in any position the jaws can be brought together by means of the screw if desired. In ordinary work, however, the front jaw is slid against the wood and the handle turned a part of a turn to the right, thus giving a secure grip, and when a new piece is to be inserted the handle is turned back to its first position, when the jaws may be adjusted to the new work, and by means of the handle the requisite pressure be again applied. If extra compression should be required it is simply necessary to continue the operation of clamping until the desired result is obtained. The manufacturers call attention to the advantages possessed by these vises in the convenience

and call attention to the improvements in its manufacture. The blade or cutting part is described as made from fine sheet steel worked in water and hardened in oil. There is a slight groove along the back for the purpose of giving stiffness or rigidity to the thin blade. The serrated form of tooth, it will be observed, is retained.



G. & M. Nolin's Hay Knife.

The blade is securely fastened to a strong iron shank, upon which are driven ferruled hardwood handles strongly riveted. The knife thus formed is 35 inches long by 3 inches wide at the widest part, weighing only 2½ pounds. That it is readily sharpened and from its extreme thinness readily forced through closely packed material are points in regard to it which are emphasized by the manufacturers, and its conse-

The Alderney Milk-Strainer Pail.

By means of the engravings presented herewith we lay before our readers a general view of the Alderney Milk-Strainer



The Alderney Milk-Strainer Pail.—Fig. 1.—General View.

Pail, which has recently been placed upon the market by Wm. J. H. Gluck, of Baltimore, Md. This device is a combination water pail, milking bucket, milk cooler,

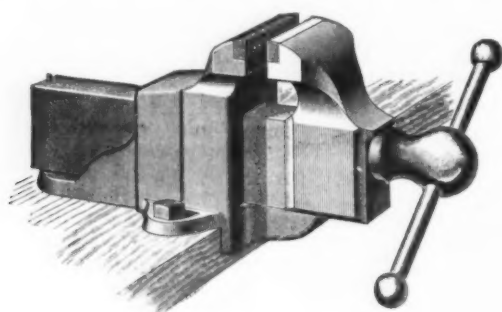


Fig. 2.—Quick-Action Machinists' Vise.

and rapidity of their action, their finish, strength, simplicity of construction and durability. They are made in two sizes, with a width of jaw 10 and 14 inches, weighing respectively 53 and 60 pounds. Their machinists' vise represented in Fig. 2 is made on the same principle, and has the same general construction as the wood-workers', the shape of the parts being changed to correspond with the different uses for which it is intended.

Out of the 419 swords in use in the Fifth Dragoon Guards of the British army only 363 passed the test recently made.

quent adaptation for cutting hay, straw, corn stalks, ensilage, peat, &c. They also allude to their improved methods and machinery as enabling them to put it on the market at a moderate price.

A school-ship for the training of seamen will be stationed at Philadelphia, at a cost of \$25,000 per annum, of which the State will contribute \$10,000 and the city \$15,000. The Saratoga has been detailed from the navy for this purpose. Capt. Lawrence, harbor master of the port, says the training ship should be on water what our manual training school is on land.

cloth or wire strainer bucket, as the user may prefer. It is of such shape as to give a natural flow of the contents with no drip remaining. It has no spout to break off or become leaky; is easily and thoroughly cleaned, and may be employed with a wire or cloth strainer, as the case may demand. The adjustment of the strainer is very simple and requires but a moment's time to accomplish. In Fig. 1 of the cuts is shown a general view of the pail, while the small engravings shown in Fig. 2 represent the strainers which may be employed with the pail. A bar runs along under the strainer and prevents anything from passing out between the sides of the strainer and the pail. This article, it is

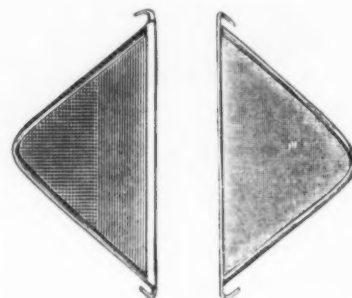


Fig. 2.—General View of Strainers.

claimed, may be packed very closely for shipment, eight Alderney pails requiring the same space as two of the old-style strainer pails. It is made of IC or IX tin, as may be desired.

Building is active in Philadelphia. Of 1363 permits issued this season, more than half are for two-story dwellings.

New Jail Padlocks.

The illustrations herewith given represent a new lock which is put on the market by the Allendale Lock Company, Lancaster, Pa. Fig. 1 represents the lock cut



Fig. 1.—Jail Lock No. 512, Cut Open to Show Interior.—Full Size.

open so as to show the interior construction, Fig. 2 the form of the nickel-plated key, and Fig. 3 their patent tumbler and stationary plate. All these cuts are full size. This lock is designated as their No. 512, and is put on the market to meet the



Fig. 2.—Key.

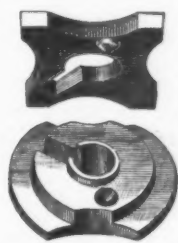


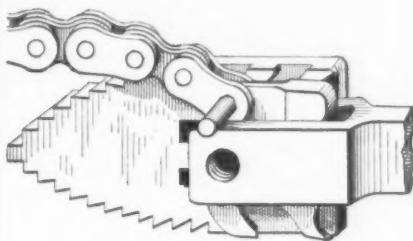
Fig. 3.—Patent Tumbler and Stationary Plate.

demand for a jail lock of superior quality and security. It is made of brass and weighs $7\frac{1}{2}$ pounds to the dozen. The company call special attention to the mechanism and construction as being different from that of any other padlocks. As shown in Fig. 3, the tumblers are interlocking top and bottom, and the flanges of each tumbler meet through the stationary plates, making it impossible to pick them. While by using a lockpick one tumbler can be turned open, the point is made that the pick cannot be raised to the next tumbler and cannot be taken from the lock without first turning the tumbler into position. It will be noticed that the tumblers are so arranged that when the movable tumbler is locked in position to remove the key the projection on the

stationary plate, Fig. 3, engages in the opening or cavity in the movable plate also shown in Fig. 3, and the downward pressure of the spring presses the tumblers together, so that it is impossible for them to move out of place, as is often the case with other locks. These goods are put on the market with a full guarantee that they will not get out of order. They are packed separately in cartons, half dozen in a box. The company also manufacture a line of cheaper goods, to the quality and low price of which they allude.

The Improved Brock Patent Chain Pipe Wrenches.

The accompanying illustration represents an improvement recently made in the Brock chain pipe wrenches manufactured by J. H. Williams & Co., 9 to 15 Richards street, Brooklyn, N. Y. The cut represents the wrench with one side of the head



The Improved Brock Patent Chain Pipe Wrench.

removed, so as to give some of the details of construction, which could not otherwise be so satisfactorily shown. As the wrench is now made it will be seen that, besides the steel pin by which one end of the chain is fastened, there is a steel safety link, which engages firmly with the jaws, thus giving an element of strength not found in other wrenches, and constituting, it is considered by the manufacturers, a valuable improvement in this wrench. The addition of the safety link does not affect the reversibility of the tool, and it is to be noticed that the other end of the chain engages with the jaws in a similar manner, as shown in the cut, thus giving the increased security at either end.

The Mikado Watering Pot.

William J. H. Gluck, of Baltimore, Md., has just brought out a new style of watering-pot, known as the Mikado, a general



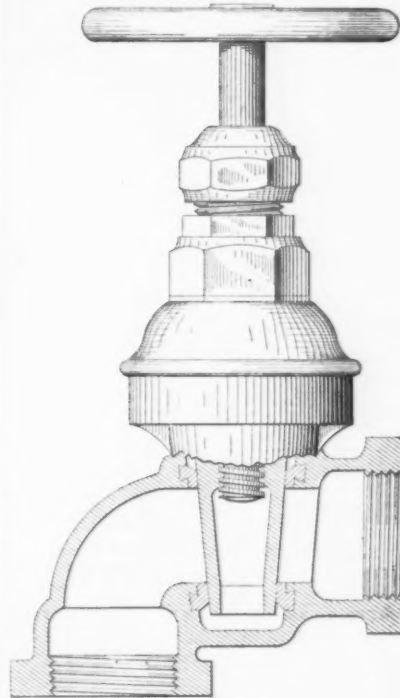
The Mikado Watering-Pot.

view of which is afforded by means of the accompanying illustration. It is constructed in such a way that the contents will not slop over, and is of a shape which the manufacturer states gives a natural flow to the water. It is provided with a zinc rose having a detachable perforated

piece. The bottom is protected by a foot, rendering it more durable than would otherwise be the case. The pot has no stays to break off, and when drained it is said no liquid accumulates in the spout, as with the old style of watering-pots. The Mikado is made in 10 sizes, japanned in assorted colors and handsomely decorated when desired. It is well made throughout and is claimed to be one of the most practical watering-pots for the conservatory or garden ever put on the market.

Angle Gate Valve for Radiators.

Various contrivances have been proposed to catch the leakage from stuffing boxes of radiator valves, so as to prevent



Angle Gate Valve for Radiators.

damage until the valve can be repacked. In steam-heating apparatus the angle or corner valve may be closed and all leakage is prevented, but hot-water circulating jobs, where generally only one valve is used, the closing of the angle or corner valve does not stop the leakage through the stuffing box, as the water is still in contact with the upper or stuffing box end of the valve through the radiator. The accompanying cut shows a new application of a solid gate valve, and among other advantages of greater importance claimed for it, it prevents leakage at the stuffing box when closed on a hot-water heating job, as the double seat on the gate cuts off all pressure from the stuffing box, which can be easily packed. The space occupied by this form of radiator valve is the same as that of a well-designed angle valve. On an inch valve the height from lowest point to top is about $7\frac{1}{2}$ inches, and the length over all about 4 inches. Another point in this valve of particular worth is the curved elbow by which direction is given to the flow of steam or water, thus materially reducing the friction and abolishing what might be termed the rebound, which occurs in angle or corner valves. The foregoing are some of the general claims made for this valve, and an examination of the sketch will further explain its design and construction. These valves, which are made with moving or stationary spindles as desired, are manufactured by the Chapman Valve Manufacturing Company, Indian Orchard, Mass., and 72 Kilby street, Boston, Mass.

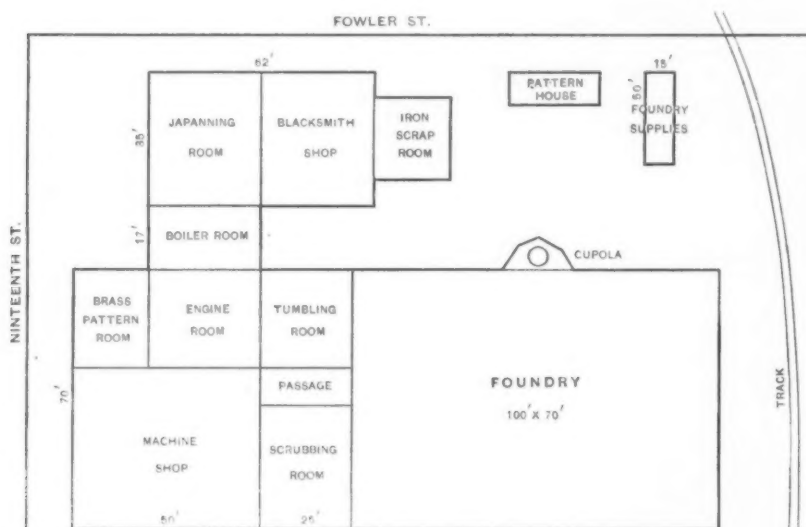
The Moore Manufacturing and Foundry Company.

The new works of the Moore Manufacturing and Foundry Company, at Milwaukee, Wis., are now in full operation. A sketch of their ground plan is shown herewith. The erection of the works was begun on August 10 last, and on November 20 the first foundry heat was taken. Much of the time since then has been employed in the construction of tools for the works, most of the machinery used being built from the company's own designs, and especially adapted to their use. From 70 to 100 hands are employed. The works have already proved too small to accommodate the increasing business of the company, and they have in contemplation the erection of an addition to the foundry in the spring, which will be of about the same size and tonnage capacity as the present one. Having an acre and a half of ground, they have ample room for the extension of their facilities.

The main building of the works is 50 feet deep and 70 feet front, with three floors. The ground floor is occupied by

All the buildings except the boiler-house are frame. The foundry is well lighted on three sides and well ventilated through revolving panels in the skylight. It is equipped with a traveling crane 25 feet long, extending over one side of the building, with a track running the whole length, and designed to handle heavy castings and flasks. The cupola occupies a small annex at the side of the foundry which is lined with corrugated iron. The whole plant is lighted by electricity furnished by a Brush dynamo operating 90 lights of 16 candle-power each.

The office is finished in Virginia pine. The stairway to the third floor is immediately outside of the office, and the space under it is utilized for a cloak-room, wash-room, &c. Under the lowest part of the stairway ten drawers or slides, 30 by 30 inches each, have been fitted in, for the storage of electrotypes. The whole building is heated by steam except the foundry, which is kept comfortable by the heat from two large core ovens. Adjoining the foundry is a brick pattern-room in which all patterns are stored, saving insurance and securing protection from fire.



Works of Moore Mfg. and Foundry Co., Milwaukee, Wis.

the machine shop, finishing department and engine-room. The second floor is used for the office, stock-room, pattern shop and draftsmen's room. The latter has complete arrangements for making blue prints, including a dark-room. In making exposures the plates are run out of the dark-room on rollers through the side of the building on a frame over the roof of the foundry which is in the rear, and thus take very little handling. The third floor is used for a store-room and for finishing. An elevator of two to three tons capacity is used in handling materials from one floor to another. The foundry is one story high, 70 feet wide by 100 feet deep, and contains 28 molding floors and a cupola with a capacity of 10 tons a day. Between the foundry and the main building are the tumbling-room and the scratching-room, each 25 feet by 35 feet, the tumbling-room having exhaust fans. The engine is of 50 horse-power, automatic cut-off, and was built by the Filer & Stowell Mfg. Company. The boiler-room adjoins the engine-room and is 17 feet by 35 feet. Beyond the boiler-room is the japanning-room, which, in connection with the blacksmith shop in the rear, occupies a building 35 feet by 62 feet. The japanning room contains two large baking ovens, built of solid brick, with brick arches, and a large annealing oven. The baking ovens are fired from the boiler-room. Attached to the blacksmith shop is an iron stock-room.

The works are located on the Milwaukee and St. Paul, Wisconsin Central and Milwaukee and Northern railroads, having a switch 300 feet in length for their exclusive use. Along the track near the foundry is a building, 15 by 50 feet, two stories high, for storing inflammable material and coke, sand and general foundry supplies. An ample supply of water is secured from a well on the premises 80 feet deep. It is stored in a tank from which the boilers are supplied. The pumping is governed by an automatic float which regulates the supply and keeps the water in the tank at a certain depth.

The company are now engaged in making their own hardware specialties, such as door hangers, pulley blocks, vises, &c., and will shortly engage in some new lines which they are not as yet prepared to mention. They are also making job castings for a great variety of machinery as well as for hot-air furnaces, and are in a position to take contracts for building machinery.

The Interstate Commerce hearing at Washington, at which the trunk lines were represented, was suspended on Monday for two weeks, to allow Southern roads an equal opportunity. In concluding the hearing, Judge Cooley said: "Here is the law, and it is not for you hereafter to say to us that there are practical obstacles in the way of complying with it; that you would lose business by

so doing, and all that sort of thing. We are not concerned in that. We do not wish to do anything to make you lose business; at the same time we cannot accept it as a valid excuse that if you obey the law you will thereby lose business. The time ought to be considered as gone by when a manager can come to us and say: 'I named this rate, and I did it regardless of law, because my competitor has done the same thing.' * * * I trust that, after saying so much, we shall not two weeks hence have complaints brought to us that these practices have been going on in the meantime. Parties must not take the redress of wrongs into their own hands when the legality of what they complain of is, to say the least, very doubtful. They ought to remember, too, that, though the hearing is suspended two weeks, the law is not suspended; that remains in force, and the penalties are in the meantime pronounced against all violators, just as much as though no such continuance had been taken."

A New Natural Gas Company.

A new corporation, known as the Equitable Gas Company, has just been organized at Pittsburgh for the purpose of dealing in natural gas. The new organization has a capital stock of \$1,000,000, and has secured 2000 acres of gas territory with a high pressure, lying 5 miles north of Murfreesville. The line from the field to Pittsburgh is to be cast iron, and the contracts for making the pipe have been placed with the Addystone Pipe Company, of Cincinnati, and Dennis, Long & Co., of Louisville. These contracts are now being filled, and the first of the pipe will be received within a short time. Starting at the wells, the line will be 24 inches in diameter for 6 miles. From that point to the city the size will be increased to 30 inches. The mains in the city will be 30, 24, 16 and 12 inches, according to the service demanded. All will be of cast iron. The company is composed of manufacturers who organized it for their own benefit. The primary object will be to furnish gas to the mills and factories of the firms interested, while any surplus will be sold to other mills. The idea in putting down so large a main is to prepare for any contingency that might arise in future years by reason of the pressure at the wells becoming reduced. The following are the officers of the company: Directors, Reuben Miller, J. Stuart Brown, James Hemphill, Robert B. Brown, Charles H. Zug, A. F. Keating, George Trautman, L. M. Morris and Frank B. Robinson; president, Robert B. Brown; treasurer, Reuben Miller; secretary, William H. Allred; engineer, William D. Hartupee.

Witherbees, Sherman & Co., of Port Henry, have announced their opening prices for "Old Bed 21 Ore," offering to sell 150,000 tons of selected lump for puddling at \$4 per gross ton, and 225,000 tons of furnace ore at \$2.50. If the purchaser elects to pay cash for any month's delivery on or before the 15th of the following month an abatement of 50 cents per ton will be allowed on selected lump and 25 cents per ton on furnace ore. These abatements for cash payment are increased to 65 cents and 35 cents respectively prior to August 1.

The Beckett & McDowell Mfg. Company, of Arlington, N. J., are putting up a plant of crushers, rolls, &c., for an electric separating mill for the Theall Mine, at Croton, N. Y., owned by the Cheevers. We understand that the capacity of the plant is to be 100 tons of concentrates daily.

CURRENT HARDWARE PRICES.

MARCH 20, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' price, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.—

Caps, Percussion, 1000—	
Hicks & Goldmark's	
F. L. Waterproof, 1-10's.....	50¢
E. B. Trimmied Edge, 1-10's.....	55¢
E. B. Grnd. Edge, Cent. Fire.....	25 ¢
1-10's, 70¢.....	7¼ ¢
Double Waterproof, 1-10's.....	\$1.40
Musket Waterproof, 1-10's.....	50¢
G. D.....	28¢
S. B.....	30¢

Union Metallic Cartridge Co.	
F. C. Trimmied.....	50¢
F. L. Ground.....	55¢
Cent. Fire Ground.....	70¢
25 ¢.....	25 ¢
Db. Waterproof.....	\$1.40
Db. Waterproof, in 1-10's.....	\$1.40
S. B. Genuine Imp.orted.....	45¢
Eley's E. B.....	54¢
Eley's D Waterproof, Central Fire.....	\$1.60

Cartridges.....	50¢&52 ¢
Rim Fire Military.....	15¢&2 ¢
Cent. Fire, Pistol and Rifle.....	25¢&2 ¢
Cent. Fire, Military and Sporting.....	15¢&2 ¢
Blank Cartridges, except 22 and 32 cal., additional 10 ¢.....	2 ¢
Blank Cartridges, 22 cal., \$1.75.....	2 ¢
Blank Cartridges, 32 cal., \$3.50.....	2 ¢
Primed Shells and Bullets.....	15¢&2 ¢
B. B. Caps, Round Ball, \$1.75.....	2 ¢
B. B. Caps, Con. Ball, Swgd., \$2.00.....	2 ¢

Primers.....	
Berdan Primers, \$1.00.....	2 ¢
B. L. Caps (for Sturtevant Shells) \$1.00.....	2 ¢
All other Primers, \$1.20.....	2 ¢

Shells.....	
First quality, 4, 8, 10 and 12 gauge.....	25¢&10¢&2 ¢
First quality, 14, 16 and 20 gauge (\$10 list).....	30¢&10¢&2 ¢
Star, Club, Rival and Climax brands.....	33¢&10¢&2 ¢
10 and 12 gauge.....	33¢&10¢&2 ¢
Club, Rival and Climax brands, 14, 16 and 20 gauge.....	30¢&10¢&2 ¢
Seibold's Comb. Shot Shells.....	15¢&2 ¢
Brass Shot Shells, 1st quality.....	60¢&2 ¢
Brass Shot Shells, Club, Rival, Climax.....	65¢&2 ¢
I X L, 10 and 12 gauge.....	40¢&5¢&2 ¢
"Special," 16 gauge.....	30¢&10¢&2 ¢
"Special," 10 and 12 gauge.....	40¢&10¢&2 ¢
Fowler's Pat.....	\$3.25

Shells Loaded.....	
A. M. Co. List No. 19, 1887.....	20¢&10¢

Wads.....	
U. M. C. & W. R. A.—B. E., 11 up, \$2.00.....	20¢&5 ¢
U. M. C. & W. R. A.—B. E., 9&10.....	2.30
U. M. C. & W. R. A.—B. E., 7&8.....	2.40
U. M. C. & W. R. A.—P. E., 11 up, 3.10.....	3.10
U. M. C. & W. R. A.—P. E., 9&10.....	4.00
U. M. C. & W. R. A.—P. E., 7&8.....	4.90
Eley's B. E., 11 up.....	\$1.75
Eley's P. E., 11 up.....	2.80

Anvils.....	
Eagle Anvil, 10¢.....	20¢&20¢&5 ¢
Peter Wright's.....	90¢
Armitage's Mouse Hole.....	84¢
Armitage's Mouse Hole, Extra 11¢.....	\$1.14
Trenton.....	94¢&9¢
Wilkinson's.....	94¢&10¢
J. & Riley Carr, Pat. Solid.....	11¢&11¢
Moore & Barnes Mfg. Co.....	53¢&5 ¢

Anvil Vice and Drill.....	
Miller's Falls Co., \$18.00.....	20¢
Cheney Anvil and Vice.....	25¢
Allen Anvil and Vice, \$3.00.....	40¢&10¢

Apple Parers.....	
Advance.....	¢ doz \$4.75
Antrim Combination.....	¢ doz 5.50
Baldwin.....	¢ doz 5.25
Champion.....	¢ doz 7.25
Eureka, 1888.....	¢ doz 12.00
Family Bay State.....	¢ doz 12.00
Gem.....	¢ doz 5.25
Gold Medal.....	¢ doz 4.00
Hudson's New '88.....	¢ doz 3.75
Ideal.....	¢ doz 4.75
Improved Bay State.....	¢ doz 36.00
Little Star.....	¢ doz 5.00
Monarch.....	¢ doz 13.50
New Lightning.....	¢ doz 5.50
Oriole.....	¢ doz 4.00
Penn.....	¢ doz 4.00
Perfection.....	¢ doz 4.00
Pomona.....	¢ doz 6.00
Rocking Table.....	¢ doz 4.50
Turntable.....	¢ doz 13.50
Victor.....	¢ doz 4.50
Waverly.....	¢ doz 4.50
White Mountain.....	¢ doz 4.25
72.....	¢ doz 5.75
78.....	¢ doz 6.50

Augers and Bits.....	
Douglas Mfg. Co.....	70¢
Wm. A. Ives & Co.....	70¢
Humphreysville Mfg. Co.....	70¢
French, Swift & Co. (F. H. Beecher).....	55 ¢
Cook's, Douglas Mfg. Co.....	50¢&10¢&5 ¢
Cook's, N. H. Copper Co. 50¢&10¢&5 ¢	50¢&10¢&5 ¢
Ives' Circular Lip.....	60¢
Patent Solid Head.....	30¢
C. E. Jennings & Co., No. 10, extension lip.....	40¢
C. E. Jennings & Co., No. 30.....	60¢
C. E. Jennings & Co., Auger Bits, 32¢ quarters, No. 5, 8; No. 30, \$3.50, 20¢	32¢ quarters, No. 5, 8; No. 30, \$3.50, 20¢
Lewis' Patent Single Twist.....	45¢
Jennings' Augers and Bits.....	25¢
Imitation Jennings' Bits.....	80¢&5 ¢
Pugh's Black.....	20¢
Car Bits.....	50¢&10¢&60¢
L. Hommedieu Car Bits.....	15¢&10¢
Forstner Pat. Aug Bits.....	10¢

Hollow Augers—

Ives'.....	25¢&10¢
French, Swift & Co.....	25¢&10¢&5 ¢
Douglas.....	40¢&10¢
Bonney's Adjustable, ½ doz \$48.....	40¢&10¢
Stearns.....	20¢&10¢
Ives' Expansive, each \$4.50.....	50¢&5 ¢
Universal Expansive, each \$4.50.....	20¢
Wood's.....	25¢&25¢&10¢

Expansive Bits—

Clarke's small, \$18; large, \$26.....	35¢&35¢&5 ¢
Ives' No. 4, ½ doz \$60.....	40¢
Swan's.....	40¢
Stearns, No. 1, \$26; No. 2, \$22.....	35¢
Stearns' No. 2, \$48.....	20¢

Gimlet Bits—

Common.....	¢ gross \$2.75¢&3.25
Diamond.....	¢ doz \$1.10.....25¢&10¢
Bee.....	25¢&25¢&5 ¢
Double Cut, Shepardson's.....	45¢&45¢&5 ¢
Double Cut, Ct. Valley Mfg. Co.....	30¢&10¢
Double Cut, Hartwell's, ½ gro.....	\$5.25
Double Cut, Douglas's.....	40¢&10¢
Double Cut, Ives.....	60¢&60¢&5 ¢

Bit Stock Drills—

Morse Twist Drills.....	50¢&10¢&5 ¢
Standard.....	50¢&10¢&5 ¢
Cleveland.....	50¢&10¢&5 ¢
Syracuse, for metal.....	50¢&10¢&5 ¢
Syracuse, for wood (wood list).....	30¢&30¢&5 ¢
Williams' or Holt's, for metal.....	50¢&10¢&5 ¢
Williams' or Holt's, for wood.....	40¢&10¢

Ship Augers and Bits—

L'Hommiedieu's.....	15¢&10¢&15¢&10¢&5 ¢
Watrous.....	15¢&10¢&15¢&10¢&5 ¢
Snell's.....	15¢&10¢&15¢&10¢&5 ¢
Snell's Ship Auger Pat'n Car Bits.....	15¢&10¢&15¢&10¢&5 ¢

Awl Hafts—

Sewing, Brass Fer. ½ gr. \$3.50.....	45¢&10¢
Pat. Sewing, Short, \$1.00 ½ doz.....	40¢&10¢
Pat. Sewing, Long.....	¢ doz \$1.20
Pat. Peg, Plain Top, ½ gr \$10.00.....	45¢&10¢
Pat. Peg, Leather Top, ½ gr \$12.00.....	45¢&10¢

Awls, Brad Sets, &c—

Awls, Sewing, Common.....	gr \$1.70, 35¢
Awls, Should. Peg.....	gr \$2.45, 40¢&40¢&10¢
Awls, Pat. Peg.....	gr 63¢..... 40¢&40¢&10¢
Awls, Shouldered Brad.....	2.70 ½ gr..... 35¢
Awls, Handled Brad.....	\$7.50 ½ gr..... 45¢
Awls, Handled Scratch.....	gr \$7.50, 35¢&10¢
Awls, Socket Scratch.....	gr doz, \$1.50, 25¢&30¢

Awl and Tool Sets—

Alken's Sets, Awls and Tools.....	
No. 20, ½ doz \$10.00.....	55¢&10¢
Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9.....	25¢&35¢&10¢
Miller's Falls Adj. Tool Hds.....	25¢
Nos. 1, \$12; 2, \$18.....	25¢
Henry's Combination Haft.....	¢ doz \$6.50
Brad Sets.....	
No. 42, \$10.50; No. 43, \$12.50, 70¢&10¢&5 ¢	
Stanley's Excelsior.....	
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....	30¢&10¢

Axes—

Makers' and Special Brands—	
First quality.....	¢ doz \$6.00¢&6.50
Others.....	¢ doz \$5.50¢&5.75

Axle Grease—

Fraser's.....	Keg ½ doz 4¢, Pail ½ doz 5¢
Fraser's, in boxes.....	¢ gr \$9.50
Dixon's Everlasting, in bxs.....	¢ doz 1¢
Dixon's Everlasting.....	¢ doz 2 ¢
Lower grades, special brands.....	¢ gr \$5.50¢&7.00

Axles—

No. 1.....	4¢&4¢&4¢, No. 2 5¢&4¢&5 ¢
Nos. 7 to 10.....	5¢&5 ¢
Nos. 15 to 18.....	47¢
Nos. 19 to 22.....	70¢
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5).....	33¢&5 ¢
Less than 10 sets.....	33¢&5 ¢
Over 10 sets.....	33¢&5 ¢

Bag Holders—

Sprengle's Pat.....	¢ doz \$18.....	60¢
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Balances—

Spring Balances.....	50%	
Common 24-lb.....	7 doz \$1.50.....	50%
Chatillon's Spring Balances.....	50%	
Chatillon's Circular Spring Balances.....	90%	

Bells—

Hand—

Light Brass.....	70¢&10¢
Extra Heavy.....	60¢&10¢
White Metal.....	60¢&10¢&10¢
Silver Chime.....	33¢&10¢
Globe (Cone's Patent).....	25¢&10¢&35¢

Door—

Gong, Abbe's.....	33¢&10¢
Gong, Yankee.....	45¢&10¢
Gong, Barton's.....	40¢&10¢&50¢
Crank, Taylor's.....	25¢&10¢
Crank, Brooks.....	50¢&10¢&5 ¢
Crank, Cone's.....	10¢

Crank, Connel's.....	20¢&10¢
Lever, Sargent's.....	60¢&10¢
Lever, Taylor's Bronzed or Plated.....	25¢&10¢
Lever, Taylor's Japanned.....	25¢&10¢
Lever, R. E. M. Co's.....	50¢&10¢&2 ¢
Pull, Brooks.....	50¢&10¢&2 ¢
Pull, Western.....	25¢&10¢

Cone—

Common Wrought.....	60¢&10¢
Western.....	20¢&10¢
Western, Sargent's list.....	70¢&10¢
Kentucky, "Star".....	20¢&10¢
Kentucky, Sargent's list.....	70¢&10¢
Dodge, Genuine Kentucky.....	70¢&10¢
Texas Star.....	50¢&10¢&50¢&10¢&5 ¢
Call.....	40¢&40¢&5 ¢
Farm Bells.....	¢ doz 3¢&3¢&4 ¢
Steel Alloy Church and School Bells.....	40¢

Bellows—

Blacksmiths'.....	50¢&10¢&5¢&60¢
Molders'.....	40¢&40¢&10¢
Hand Bellows.....	40¢&10¢&50¢

Belting, Rubber—

Common Standard.....	70¢&10¢
Standard.....	70¢&10¢&5 ¢
Extra.....	60¢&5¢&60¢&10¢
N. Y. B. & P. Co., Carbon.....	60¢&10¢&5 ¢
N. Y. B. & P. Co., Diamond.....	50¢&10¢

Bench Stops—

Morrill's.....	per doz \$9, 50%
Hotchkiss's.....	per doz \$5, 10@10&10%
Weston's, No. 1, \$10; No. 2, \$6.25&10&5%	
McGill's.....	per doz \$3.....10%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
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Bit Holders—

Bit Holders—

Extension,	
Barber's, ½ doz \$15.00).....	40@40&10%
Ives, ½ doz \$20.00).....	60&5@60&10%
Diagonal.....	½ doz \$24.00, 40%
Angular.....	½ doz \$24.00, 40&5%

Blind Adjusters—

Blind Adjusters—	
Domestic.....	per doz \$3.00, 33 $\frac{1}{2}$ %
Excelsior.....	per doz \$10.00.....50%&10%&2%
Washburn's Self-Locking.....	20%&20%&10%

Blind Fasteners—

Mackrell's, ½ doz, \$1.00.....	20¢&20¢&10¢
Van Sand's Screw Pat., \$15 ½ gr.....	60¢&10¢
Van Sand's Old Pat., \$15.00 ½ gr.....	55¢&10¢
Washburn's Old Pattern.....	¢ doz \$9.00, ½ gr net
Merriman's.....	new list, net
Austin & Eddy No. 2008.....	¢ gr net
Security Gravity.....	¢ doz \$9.00, ½ gr net

Blind Staples—

Barbed, ¼ in. and larger.....	¢ doz 7¼¢&8¢ net
Barbed, ½ in.....	¢ doz 8¼¢&9¢ net

Blocks—

Cleveland Block Co., Mal. Iron.....	50¢
Moore's Novelty, Mal. Iron.....	50¢

Bolts—

Door and Shutter—	
Cast Iron Barrel, Square, &c.....	70¢&70¢&10¢
Cast Iron Shutter Bolts.....	70¢&70¢&10¢
Cast Iron Chain (Sargent's list).....	65¢&10¢
Ives' Patent Door Bolts.....	60¢
Wrought Barrel.....	70¢&70¢&10¢
Wrought Square.....	70¢&70¢&10¢
Wrt Shutter, all Iron, Stanley's.....	60¢&10¢
Wrt Shutter, Brass Knob.....	40¢&10¢
Wrt Shutter, Sargent's list.....	60¢&10¢
Wrt Sunk Flush, Sargent's list.....	55¢&10¢
Wrt Sunk Flush, Stanley's list.....	50¢&10¢
Wrt B.K. Flush, Com'n.....	55¢&10¢

Carriage, Machine, &c—

Com. list June 10, '84.....	75¢&10¢&2 ¢
Genuine Eagle, list Oct., '84.....	75¢&10¢
Phila. pattern, list Oct. 7, '84, 75¢&10¢ @	75¢&10¢&5 ¢
R.B. & W., old list.....	70¢
Machine, according to size.....	75¢&10¢&80¢
Bolt Ends, according to size.....	75¢&10¢&80¢

Tire—

Common, list Feb. 28, '83.....	70¢
Portchester Bolt and Nut Company:	
Empire, list Feb. 28, '83.....	70¢
Phila., list Oct. '84.....	82¢&5 ¢
Keystone, Philadel. list Oct. '84.....	80¢
Norway, Phila., list Oct. '84.....	75¢&10¢
American Screw Company:	
Norway, Phil., list Oct. 16, '84.....	75¢&10¢
Eagle, Phil., list Oct. 16, '84.....	80¢
Phila., list Oct. 16, '84.....	82¢&5 ¢
Bay State, list Feb. 28, '83.....	70¢
R.B. & W., Philadel., list Oct. 16, '84.....	82¢
R. & E. Mfg. Co.	0¢

Cards—
Horse & Curry.....10&10&10&10&10
Cotton.....New list, Aug. 1883,
10&10&10&10
Wool.....New list, Aug. 1883,
10&10&10&10

Carpet Stretchers—
Cast Steel, Polished.....\$ doz \$2.25
Cast Iron, Steel Points.....\$ doz 80¢
Socket.....\$ doz \$1.75
Bullard's.....25&25&10¢

Carpet Sweepers—
Bissell No. 5.....\$ doz \$17.00
Bissell No. 7 New Drop Pan.....\$ doz \$19.00
Bissell, Grand.....\$ doz \$36.00
Grand Rapids.....\$ doz \$24.00
Crown Jewel, No. 1, #18.00; No. 2,
#19.00; No. 3, #20.00
Jewel.....\$ doz \$15.00
Improved Parlor Queen, Nickel.....\$ doz \$27.00
Improved Parlor Queen, Japan.....\$ doz \$24.00
Excelior.....\$ doz \$22.00
Garland.....\$ doz \$18.00
Parlor Queen.....\$ doz \$24.00
Housewife's Delight.....\$ doz \$15.00
Queen, with band.....\$ doz \$18.00
King.....\$ doz \$30.00
Weed, Improved.....\$ doz \$18.00
Hub.....\$ doz \$16.00
Cog-Wheel.....\$ doz \$16.00
Conqueror.....\$ doz \$22.00
Easy.....\$ doz \$22.00
Monarch.....\$ doz \$22.00
Goshen.....\$ doz \$21.00
Advance.....\$ doz \$18.00
Ladies' Friend, No. 1, \$ doz \$15.00;
No. 2.....\$ doz \$16.00
American.....\$ doz \$15.00
Grand Republic.....\$ doz \$35.00

Cartridges—
See Ammunition.

Casters—
Bed.....New list:
Plate.....Brass.....50&55&55
Shallow Socket.....Others.....60&60&55
Deep Socket.....List May, 1884.....30&10&40
Yale, Gem.....60&60&55
Martin's Patent (Phoenix).....45&10&50
Payson's Anti-Friction.....60&60&10
Giant Truck Casters.....30
Stationary Truck Casters.....50&10
Socket Truck Casters.....50%

Cattle Leaders—
Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....50&10%

Chain—
Trace, 6 1/2-10-2, exact,
\$ pair, \$1.03.....50&10&50&10&55
Trace, 6 1/2-10-3, exact,
\$ pair 12¢.....50&10&50&10&55
Trace, 7-10-2, exact,
\$ pair \$1.11.....50&10&50&10&55
NOTE.—Traces "Regular" sizes, 3¢ net
\$ pair less than exact.
Log, Fifth, Stretcher, and other fancy
Chains, List Nov. 1, 1884
50&10&50&10&55

Chalk Lines—
See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.....75&5&75&10%
New Haven.....75&5&75&10%
Wetherby.....75&5&75&10%
Mix.....75&5&75&10%
Ohio Tool Co.....75&5&75&10%
Douglass.....75&5&75&10%
Buck Bros.....30%
Merrill.....60&10&60&10&55
L. & I. J. White.....30&30&55

Tanged and Miscellaneous.
Tanged Firmer.....40&10%
Butcher's.....\$4.75&5.00
Spear & Jackson's.....\$5 to \$2
Buck Bros.....30%
Cold Chisels.....16&19¢

Chucks—
Beach Pat.....each, \$8.00.....20%
Morse's Adjustable, each, \$7.00, 20&20&55
Danbury.....each, \$6.00, 30&30&55
Syracuse, Balz Pat.....25%

Clamps—
Providence Tool Co.'s Wrought Iron.....25%
Adjustable, Gray's.....20%
Adjustable, Snow's.....40&55
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Cor-
ner.....20&10%
Cabinet, Sargent's.....60&8&10%
Carriage Makers, Sargent's.....70&10%
Eberhard Mfg. Co.....40&5&40&10%
Warner's.....40&10&40&10&55
Saw Clamps, see Vises

Clips—
Norway, 2 1/2, 1 1/2 & 5/16.....55&55&55
2nd grade Norway Axle, 1 1/2 & 5/16.....65&55
Superior Axle Clips.....60&55&60&55&55

Norway Spring Bar Clips, 5-16.....60&55&55
Wrought-Iron Felloe Clips.....\$ b, 5¢
Steel Felloe Clips.....\$ b, 5¢
Baker Axle Clips.....25%

Cockeyes......50%

Cocks, Brass......40. & 10&25¢

Coffee Mills—
Box and Side, List Jan. 1, 1888.....50&25
American, Enterprise Mfg Co. 20&10&30%
The Swift, L. ne Bros.....20&10%

Compasses Dividers, &c—
Compasses, Callipers, Dividers, 70&70&10%
Bemis & Call Co.'s.....60&55
Dividers.....70&55
Compasses & Callipers.....50&55
Wing and Inside or Outside.....50&55
Double.....60%
(Call's Pat. Inside).....30%
Excelior.....50%
J. Stevens & Co.'s.....25&10%

Coopers' Tools—
Bradley's.....20%
Barton's.....20&20&55
L. & I. J. White.....20&55
Albertson Mfg. Co.....25%
Deary's.....40&40&55
Sandusky Tool Co.....30&30&55

Corkscrews—
Humason & Beckley Mfg. Co. 40&40&10%
Clough's Pat. 33¢&33¢&55
Howe Bros & Hulbert.....35%

Core Knives and Cutters—
Bradley's.....10%
Wadsworth's.....25%

Cradles—
Grain.....50&25

Crow Bars—
Cast Steel.....\$ b 1¢
Iron, Steel Points.....\$ b 3¢

Curry Combs—
Fitch's.....50&10&50&10&10%
Rubberper doz \$10.00.....20%
Perfect.....50%

Curtain Pins—
Silvered Glass.....net
White Enamel.....net

Cutlery—
Beaver Falls & Booth's.....33¢
Wostenholme.....\$7.75 to \$10

Dampers, &c—
Dampers, Buffalo.....50%
Buffalo Damper Clips.....50%
Crown Damper.....40%
Excelior.....40&10%

Dividers—
See Compasses.

Dog Collars—
Embossed, Gilt, Pope & Steven's list
30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Door Springs—
Torrey's Rod, regular size.....\$ doz \$1.30
Gray's, \$ gr., \$20.00.....20%
Bee Rod \$ gr., \$20.00.....20%
Warner's No. 1, \$ doz, \$2.50; No. 2,
\$3.50.....40&10&50&10%
Gem (Coll), list April 19, 1880.....10%
Star (Coll), list April 19, 1880.....20%
Victor (Coll).....60&60&10%
Champion (Coll).....60&10&60&10&10%
Philadelphia, 5 in., \$5.00; 4 in., \$7.75; 3
Cowell's.....No. 1, \$ doz, \$18.00; No. 2,
\$15.00.....50%
Rubber, complete, \$ doz, \$4.50.....55&10%
Hercules.....25%
Shaw Door Check and Spring, 25&30&35%

Drawing Knives—
Wetherby.....75&5&75&10%
P. S. & W.....75&5&75&10%
Mix.....75&5&75&10%
New Haven.....60&10&60&10&55
Merrill.....75&5&75&10%
Douglass.....75&5&75&10%
Watrous.....15&10&25%
L. & I. J. White.....20&55
Bradley's.....35%
Adjustable Handle.....25&30&55
Wilkinson's Folding.....25&25&55%

Drills and Drill Stocks—
Blacksmiths'.....each \$1.75
Blacksmiths' Self-Feeding, each \$7.50, 20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&55
Breast, Millers Falls.....each \$3.00, 25%
Breast, Bartholomew's.....each \$2.50,
25&10&40%
Ratchet, Merrill's.....20&20&55
Ratchet, Ingersoll's.....20&20&55
Ratchet, Parker's.....20&20&55
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20&25%
Ratchet, Moore's Triple Action.....25&30%
Whitney's Hand Drill, Plain, \$11.00;
Adjustable, \$12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....\$1.75&1.85

Twist Drills—
Morse.....50&10&55
Standard.....50&10&55
Syracuse.....50&10&55
Cleveland.....50&10&55
Williams.....50&10&10%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—
Small sizes.....\$ b 6¢
Large sizes.....\$ b 6 1/4¢

Egg Beaters.
Dover.....\$ doz \$1.50
National.....\$ doz \$1.50
Family (T. & S. Mfg. Co.), \$ gro \$17.00
\$18.00

Duplex (Standard Co.).....\$ gro \$15.00
Rival (Standard Co.).....\$ gro \$12.00
Large Duplex (Standard Co.), \$ doz \$4.50
Triumph (T. & S. Mfg. Co.), \$ gro \$10.50
\$11.50

Advance, No. 1.....\$ gro \$10.50
Advance, No. 2.....\$ gro \$10.00
Bryant's.....\$ gro \$15.00
Ayres' Spiral.....\$ gro \$5.00
Double (H. & R. Mfg. Co.).....\$ gro \$10.20
Easy (H. & R. Mfg. Co.).....\$ gro \$14.00
Triple (H. & R. Mfg. Co.).....\$ gro \$16.20
Spiral (H. & R. Mfg. Co.).....\$ gro \$4.50
Paine, Diehl & Co.'s.....\$ gro \$24.00

Egg Poachers—
Buffalo Steam Egg Poachers, \$ doz, No.
1, \$6.00; No. 2, \$8.00.....25%

Electric Bell Sets—
Wollensak's.....20%
Bigelow & Dowse.....20%

Emery— No. 4 to No. 54 to Flour, CF
46 gr. 150 gr. F FF.
Kegs, \$ b.....4¢ 5¢ 2 1/2¢
1/2 kegs, \$ b.....4 1/4¢ 5 1/4¢ 2 3/4¢
1/4 kegs, \$ b.....4 1/2¢ 5 1/2¢ 3¢
In case.....6¢ 6 1/2¢ 3¢
10 lb. cans, less
than 10.....10¢ 10¢ 7 1/2¢

Enameled and Tinned Ware—
See Hollow-Ware.

Escutcheon Pins—
Iron, list Nov. 11, 1885.....50&10&50&10&55
Brass.....60&60&55

Escutcheons.
Door Lock.....Same dis as Door Locks.
Brass Thread.....60&60&10%
Wood.....25%

Faucets.
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33¢
John Sommers'.....60&10%
Frany's Pat. Petroleum.....40&5&25
B. & L. B. Co.
West's Lock, Open and Shut Key.....50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list.....60%
Metallic Key.....60&10&10%
Cork Lined.....70&5&70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots.....50&10%
John Sommers'.....40%
Peerless Best Block Tin Key.....50%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....60%
Reliable Cork Lined.....50%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, \$ doz \$50.00.....30&10%
Lane's, \$ doz \$36.00.....25&10%
Victor, \$ doz \$36.00.....25&10%

Felloe Plates......\$ b 6&6 1/4¢

Fifth Wheels.
Derby and Cincinnati.....45&55

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10&60&10%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
Other makers, best brands
Fair brands.....60&10&60&10&10%
Second quality.....70&10&60&10%
Nicholson's Horse Rasps.....60&10&60&10%
10&55
Heller's Horse Rasps.....60&7&60&10%
McCauley's Horse Rasps.....50&10%

Fluting Machines—
Knox, 4 1/2-inch Rolls.....\$3.25 each 35%
Knox, 6-inch Rolls.....\$3.00 each 35%
Eagle, 5 1/2-inch Roll, \$2.15.....35%
Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in.,
\$6.50 each.....35%
Crown Jewel, 6 in.....\$3.50 each 35%
American, 5 in., \$3.00; 6 in., \$3.40; 7 in.,
\$4.30.....35%
Domestic Fluter.....each, \$1.50
Geneva Hand Fluter, White Metal.....\$ doz \$12, 25%
Crown Hand Fluter, Nos. 1, \$15.00; 2,
\$12.50; 3, \$10.00.....30%
Shepard Hand Fluter, No. 85 \$ doz
\$15.30.....30%
Shepard Hand Fluter, No. 110 \$ doz
\$11.00.....40%
Shepard Hand Fluter, No. 95 \$ doz
\$8.00.....40%
Clark's Hand Fluter, \$ doz \$15.00.....30%
Combined Fluter and Sad Iron.....\$ doz \$15.00.....30%
Buffalo.....\$ doz \$10.00.....10%

Fluting Scissors......40%

Fodder Squeezers.
Blair's.....\$ doz \$2.00
Blair's "Climax".....\$ doz \$1.25

Forks—
Hay, Manure, &c., Asso. List.....65%
Hay, Manure, &c., Phila. List.....60&60&55
Plated, see Spoons.

Freezers, Ice Cream—
Buffalo Champion.....60&10&55
Shepard's Lightning.....65%
White Mountain.....60%

Fruit and Jelly Presses—
Enterprise Mfg. Co.....20&10&30%
Hemis.....\$ doz \$3.75&4.00
P. D. & Co.....\$ doz \$3.75&4.00
Shepard's Queen City.....40%

Fry Pans—
List.....75&5&75&10%
No. 0 1 2 3 4
\$ doz.....\$3.75 \$4.70 \$5.30 \$5.95 \$6.50
No. 5 6 7 8
\$ doz.....\$7.50 \$8.75 \$10.00 \$11.25
Low List.....65&10%
No. 0 1 2 3 4
\$ doz.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25
No. 5 6 7 8
\$ doz.....\$6.00 \$7.00 \$8.00 \$9.00

Fuse—
Common Hemp Fuse, for dry ground.....\$ 1000 ft.
Common Cotton Fuse, for dry ground 2.80
Single Taped Fuse, for wet ground.....4.75
Double Taped Fuse, for very wet gr. 6.00
Triple Taped Fuse, for very wet gr. 7.25
Small Gutta Percha Fuse, for water 7.50
Large Gutta Percha Fuse, for water 12.00

Gauges—
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Serratch.....25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50&50&55
Wire, Brown & Sharpe's.....10&20%

Gimlets.
Nail and Spike.....50&10&55
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....\$ gr \$5.00
Double Cut, Shepardson's.....45&45&55
Double Cut, Ives'.....60&60&55
Double Cut, Douglass'.....40&10%
"Bee," \$ gr \$12.....25&25&55

Glue—
Le Page's Liquid.....25&25&55
Upton's Liquid.....35%
Le Page & Co.'s Improved Process.....25&25&55

Glue Pots.
Tinned.....40%
Enameled.....40&55
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Grindstones.
Small, at factory.....\$ ton \$7.50&9.00

Grindstone Fixtures.
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%

Hack Saws.
See Saws.

Halters—
Covert's, Rope, 1/2-in. Jute.....50&25
Covert's, Rope, 1/2-in. Hemp.....40&25
Covert's Adj. Rope Halters.....40&25
Covert's Hemp Horse and Cattle Tie.....50&25
Covert's Jute Horse and Cattle Tie.....60&10&25

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&25&10%
Buffalo Hammer Co.....List Jan. 15, '87
Humason & Beckley.....50&50&10%
Atha Tool Co.....40&10&50%
Fayette R. Plumb.....40&10&50%
C. Hammond & Son.....40&10&50%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &
1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20&25%
Peck, Stow & Wicks.....40%
Sargent's.....33¢&10%

Heavy Hammers and Sledges.
3 lb and under.....\$ b 10¢ 60&10%
3 to 5 lb.....\$ b 30¢ 60&10%
Over 5 lb.....\$ b 30¢ 60&10%
Wilkinson's Smiths.....10¢&11¢

Handcuffs and Leg Irons.
Providence Tool Co., Handcuffs, \$15.00
\$ doz.....10%
Providence Tool Co., Leg Irons, \$25.00
\$ doz.....10%
Tower's.....25%
Daley's Improved Handcuffs, 2 Hands,
Polished, \$ doz \$48.00; Nickeled,
\$57.00; 3 Hands, Polished, \$ doz
\$72.00; Nickeled, \$84.00.....25%

Handles.
Iron, Wrought or Cast—
Door or Thumb.
Nos.....0 1 2 3 4
Per doz.....\$0.90 1.00 1.15 1.35 1.50
60&10&10%
Roggin's Latches.....\$ doz 30¢&35¢
Bronze Iron Drop Latches.....\$ doz 70¢ net
Jap'd Store Door Handles—Nuts, \$1.62;
Plate, \$1.10; no Plate, \$0.88.....net
Bar Door, \$ doz \$1.40.....10&10%
Chest and Lifting.....70%

Handles, Wood.
Saw and Plane.....40&10&40&10&55
Hammer, Hatchet, Axe, Sledge, &c., 40%
Brad Awl.....\$ gr \$2.00
Hickory Firmer Chisel, ass'd, \$ gr 4.50
Hickory Firmer Chisel, large, \$ gr 5.00
Apple Firmer Chisel, ass'd, \$ gr 5.00
Apple Firmer Chisel, large, \$ gr 6.00
Socket Firmer Chisel, ass'd, \$ gr 3.00
Socket Framing Chisel, ass'd, \$ gr 5.00
J. S. Smith & Co.'s Pat File.....50%
File, assorted.....\$ gr 2.75 40%
Auger, assorted.....\$ gr 5.00 40&10%
Auger, large.....\$ gr 7.00 40%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass'.....\$ set \$1.25
Pat. Auger, Swan'.....\$ set \$1.00
Hoe Rake, Shovels &c.....50&1%

Cross-Cut Saw Handles—
 Atkins' No. 1 Loop, 304; No. 3, 224; No. 2 and No. 1, Reversible, 224.
 Boynton's Loop Saw Handles, 50¢. 60¢
 Champion.....15¢

Hangers—

Barn Door, old patterns.....60¢10¢10¢70¢
 Barn Door, New England.....60¢10¢10¢70¢
 Samson Steel Anti-Friction.....55¢
 Orleans Steel.....55¢
 Hamilton Wrought Wood Track.....55¢
 U. S. Wood Track.....55¢
 Champion.....60¢10¢
 Rider and Wooster, Medina Yfg. Co.'s
 list.....70¢
 Climax Anti-Friction.....60¢
 Climax Anti-Friction for Wood Track.....55¢
 Zenith for Wood Track.....55¢
 Reed's Steel Arm.....50¢
 Challenge, Barn Door.....50¢
 Sterling's Imp'ed (Anti-Friction).....65¢10¢
 Victor, No. 1, \$15.00; No. 2, \$10.50; No. 3, \$18.00.....50¢25¢
 Chertree.....50¢10¢10¢
 Kidder's.....50¢10¢10¢
 The Boss.....60¢10¢
 Best Anti-Friction.....60¢10¢
 Duplex (Wood Track).....60¢10¢
 Terry's Pat., ½ doz pr. 4 in., \$10.00; 5 in., \$12.00.....50¢10¢
 Cronk's Pat., No. 4, \$12.00; No. 5, \$14.40; No. 6, \$18.00.....50¢10¢
 Wood Track Iron Clad, ½ ft. 10¢.....50¢

Carrier Steel Anti-Friction.....50¢50¢50¢
 Architect.....25¢
 Eclipse.....30¢10¢
 Felix, ½ set \$4.50.....20¢
 Richards.....30¢30¢10¢
 Lane's Steel Anti-Friction.....40¢10¢
 Ball Bearing Door Hanger.....20¢10¢25¢10¢
 Warner's Pat.....30¢30¢10¢
 Stearns' Anti-Friction.....20¢20¢10¢
 Stearns' Challenge.....25¢10¢25¢10¢10¢
 Faultless.....40¢40¢5¢
 American, ½ set \$6.00.....30¢10¢
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....40¢
 Paragon, Nos. 1, 2 and 3.....40¢10¢
 Paragon, Nos. 5, 6, 7 and 8.....20¢10¢
 Crescent.....60¢60¢10¢
 Nickel, Cast Iron.....50¢
 Nickel, Malleable Iron and Steel.....50¢
 Scranton Anti-Friction Single Strap.....35¢
 Scranton Anti-Friction Double Strap.....40¢
 Universal Anti-Friction.....40¢
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....45¢
 Star.....40¢10¢40¢10¢5¢
 May.....50¢50¢50¢10¢
 Barry.....40¢10¢

Harness Snaps—

See Snaps.

Hatches—

List Jan. 1, 1888.....35¢40¢
 Isaiah Blood.....40¢50¢
 Hunt's Shingling, Lath and Claw.....40¢50¢
 Hunt's Broad.....40¢10¢50¢
 Buffalo Hammer Co.....40¢10¢50¢
 Hurd's.....40¢10¢50¢
 Fayette R. Plumb.....40¢10¢50¢
 Wm. Mann Jr. & Co.....50¢50¢50¢
 Underhill's Edge Tool Co.....40¢50¢10¢
 Underhill's, Haines & Co.....35¢
 C. Hammond & Son.....40¢10¢50¢
 Simmons.....40¢10¢50¢
 Peck's.....40¢10¢40¢10¢5¢
 Kelly's.....50¢50¢50¢
 Sargent & Co.....50¢
 Ten Eyck Edge Tool Co.....40¢10¢40¢5¢
 Collins.....10¢

Hay and Straw Knives—

Lightning, Mfrs. price \$18.00, 25¢
 But jokers frequently give extras.
 Gem.....½ doz \$10
 Wadsworth.....½ doz \$11.50
 Carter's Needle.....½ doz \$11.50
 Heath's.....½ doz \$13.50
 Auburn Hay, Com. and Spear Point.....50¢
 Auburn, Straw.....40¢
 Nolin's Hay.....½ doz \$10.00

Hinges—

Wrought Iron Hinges
 Strap and T.....75¢75¢5¢
 Screw Hook and Strap.....34¢
 Strap.....34¢
 Heavy Welded Hook.....34¢
 Hook.....34¢
 Screw Hook.....½ doz \$1.50
 and Eye.....½ doz \$2.45
 Rolled Blind Hinges, Nos. 32 and 34.....50¢10¢
 Rolled Blind Hinges, Nos. 232 and 234.....55¢10¢
 Rolled Plate.....70¢10¢
 Rolled Raised.....70¢10¢
 Plate Hinges.....10¢12¢10¢
 "Providence" over 12 in., ½ doz.....4¢
Spring Hinges—
 Geer's Spring and Blank Butts.....40¢
 Union Spring Hinge Co.'s list, March, 1888.....20¢
 Acme and U. S.....20¢
 Empire and Crown.....20¢
 Hero and Monarch.....50¢
 American, Gem, and Star, Japanned.....20¢
 American, Gem, and Star, Bronzed.....net
 Oxford, Bronze and Brass.....net
 Barker's Double Acting.....20¢10¢
 Union Mfg. Co.....25¢
 Bommer's.....30¢
 Buckman's.....15¢20¢
 Chicago.....30¢
 Wiles.....10¢
 Devore's.....40¢
 Rex.....40¢
 Royal.....60¢
 Reliable.....60¢
 Champion.....60¢

Gate Hinges—

Western.....½ doz \$4.40, 60¢
 N. E.....½ doz \$7.00, 55¢
 N. E. Reversible.....½ doz \$6.20, 55¢10¢
 Clark's, Nos. 1, 2, 3.....60¢10¢5¢
 N. Y. State.....½ doz \$5.00, 55¢10¢
 Automatic.....½ doz \$12.50, 50¢
 Common Sash.....½ doz \$4.50, 55¢
 Seymour.....45¢10¢
 Shepard's.....60¢10¢5¢
 Reed's Latch and Hinges.....½ doz \$12.00, 50¢

Blind Hinges—

Parker.....75¢25¢
 Palmer.....50¢5¢10¢
 Seymour.....70¢25¢
 Nicholson.....45¢10¢
 Huffer.....50¢

Clark's, Nos. 1, 3, 5, 40 and 50.....75¢10¢5¢80¢

Clark's Mortise Gravity.....50¢
 Sargent's, Nos. 1, 3, 5, 11, 13.....75¢10¢75¢10¢5¢
 Sargent's, No. 12.....75¢10¢75¢10¢5¢
 Reading's Gravity.....75¢10¢75¢10¢5¢
 Noiseless.....75¢10¢5¢
 Niagara.....80¢25¢
 Buffalo.....80¢25¢
 Clark's Genuine Pat.....80¢25¢
 O. S., Lull & Porter.....75¢10¢
 Acme, Lull & Porter.....75¢10¢
 Queen City Reversible.....75¢
 Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75¢10¢25¢
 North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50.....55¢25¢

Hoes—

Handled—

Garden, Mortar, &c.....65¢
 Planter's, Cotton, &c.....65¢
 Warren Hoe.....60¢
 Magic.....½ doz \$4.00
Eye—
 D. & H. Scovill.....20¢
 Lane's Crescent Planters Pattern.....45¢5¢
 Lane's Razor Blade, Scovill Pattern.....30¢
 Maynard, S. & O. Pat.....45¢5¢
 Sandusky Tool Co., S. & O. Pat.....60¢
 Hubbard & Co., S. & O. Pat.....60¢
 Chattanooga Tool Co., S. & O. Pat.....60¢
 Grub.....60¢60¢10¢

Hog Rings and Rings—

Hill's Improved Rings.....½ doz \$4.50
 Hill's Old Style Rings.....½ doz \$3.00
 Hill's Tongs.....½ doz \$4.50
 Hill's Rings.....½ doz bxs \$2.25, 2.40
 Perfect Rings.....½ doz \$2.50
 Moore's Different Ring.....½ doz \$2.50
 Blair's Hog Rings.....½ doz \$5.00, 4.65
 Champion Rings.....½ doz \$2.25
 Champion Rings, Double.....½ doz \$2.25
 Brown's Rings.....½ doz \$2.00
 Brown's Rings.....½ doz \$1.25, 1.30

Holding Apparatus—

Moore's Hand Hold, with Lock.....40¢
 Brake.....30¢
 Moore's Differential Pulley Block.....40¢
 Energy Mfg. Co.'s.....25¢

Holders, File and Tool—

Balz Pat.....½ doz \$4.00; 25¢
 Nicholson File Holders.....25¢

Hollow-Ware—

Iron—

Stove Hollow-Ware—
 Ground.....60¢60¢5¢
 Unground.....60¢10¢60¢10¢10¢
 Enamelled Hollow-Ware—
 Maslin Kettles.....65¢10¢
 Boilers and Saucepans.....40¢5¢
 Tinned Boilers and Saucepans.....40¢
 Gray Enamelled-Ware—
 Stove.....50¢50¢5¢
 Maslin Kettles.....60¢10¢60¢10¢10¢
 Boilers and Saucepans.....40¢5¢
 Agate and Granite Ware.....25¢
 Rustless Hollow-Ware.....50¢50¢5¢
 Galvanized Tea-Kettles.....50¢50¢5¢

Cast Iron—

Bird Cage, Sargent's list.....60¢10¢10¢
 Bird Cage, Reading.....60¢10¢10¢
 Clothes Line, Reading list.....60¢10¢60¢10¢10¢
 Ceiling, Sargent's list.....55¢10¢10¢
 Harness, Reading list.....55¢10¢55¢10¢10¢
 Coat and Hat, Sargent's list.....55¢10¢60¢10¢
 Coat and Hat, Reading.....50¢10¢50¢10¢10¢
Wrought Iron—
 Cotton.....½ doz \$1.25
 Cotton Pat. (N. Y. Mallet & Handle Wks.).....½ doz \$1.25
 Tassel and Picture (T. & S. Mfg. Co.).....50¢
 Wrought Staples, Hooks, &c.....60¢10¢
 See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1888.....45¢
 Wire Coat and Hat, Miles, list April, 1888.....45¢
 Indestructible Coat and Hat.....45¢
 Wire Coat and Hat, Standard.....45¢
 Belt.....75¢10¢80¢

Miscellaneous.

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50
 Nolin's Grass.....½ doz \$2.25
 Bush.....55¢60¢
 Whitetree-Patent.....55¢
 Hooks and Eyes—Malleable Iron.....70¢70¢10¢
 Fish Hooks, American.....60¢10¢10¢
 Bench Hooks.....See Bench Stops.

Horse Nails—

Nos. 6 7 8 9 10
 Ausable.....28¢26¢25¢24¢23¢
 25¢10¢25¢10¢10¢
 Clinton, Fin.....24¢22¢21¢20¢19¢
 Essex.....28¢26¢25¢24¢23¢
 25¢10¢25¢10¢10¢
 Lyra.....25¢23¢22¢21¢20¢
 40¢10¢5¢50¢
 Snowden.....25¢23¢22¢21¢20¢
 Putnam.....23¢21¢20¢19¢18¢
 Vulcan.....23¢21¢20¢19¢18¢17¢16¢15¢
 Northwest.....25¢23¢22¢21¢20¢
 10¢10¢5¢5¢
 Globe.....23¢21¢20¢19¢18¢20¢21¢
 Boston.....23¢21¢20¢19¢18¢20¢21¢
 A. C.....25¢23¢22¢21¢20¢
 C. B.-K.....25¢23¢22¢21¢20¢
 25¢10¢33¢45¢
 Champlain.....28¢26¢25¢24¢23¢
 25¢10¢10¢

New Haven.....28¢26¢25¢24¢23¢
 Saranac.....23¢21¢20¢19¢18¢30¢10¢
 Champion.....25¢23¢22¢21¢20¢
 10¢10¢10¢
 Capewell.....28¢26¢25¢24¢23¢
 Star.....23¢21¢20¢19¢18¢35¢5¢35¢10¢
 No. 2, \$3.10; No. 3, \$2.70.....10¢10¢10¢12¢
 Anchor.....23¢21¢20¢19¢18¢35¢
 Western.....23¢21¢20¢19¢18¢40¢10¢
 Empire Bronzed.....14¢10¢
Horse Shoes—See Shoes Horse.

Hose, Rubber—

Competition.....75¢10¢75¢10¢5¢
 Standard.....70¢70¢10¢
 Extra.....60¢60¢10¢
 N. Y. R. & P. Co., Para.....30¢10¢
 N. Y. R. & P. Co., Extra.....50¢
 N. Y. R. & P. Co., Dundee.....60¢10¢5¢

Huskers—

Blair's Adjustable.....½ gr \$8.00
 Blair's Adjustable Clipper.....½ gr 7.00

Indurated Fiber-Ware.

Spittoons, No. 2, ½ doz.....\$6.75
 Bastins, Ringed, ½ doz, No. 1, \$3.70; No. 2, \$3.10; No. 3, \$2.70.....\$2.70
 Washubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ½ doz nests.....\$16.87
 Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ½ doz nests.....\$8.37
 Butter Bowls, 15, 17 and 19-inch (3 pieces), ½ doz nests.....\$6.75
 Liquid Measures, pt., qt., 2 qt. and 5 qt. (4 pieces) ½ set.....\$3.00
 Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ½ set.....\$2.25
 See also *Fails*.

Jack Screws—See Screws.

Kettles— Spun. Stamped.
 Brass, 7 to 17 in., ½ doz.....24¢ 21¢
 Brass larger than 17 in., ½ doz.....26¢ 23¢
 Enamelled and Tea Kettles.....See Hollow-Ware.

Keys—

Lock Ass'n list Dec. 30, 1886.....50¢10¢
 Eagle, Cabinet, &c.....33¢3¢2¢
 Hotchkiss' Brass Blanks.....40¢
 Hotchkiss' Copper and Tinned.....40¢
 Hotchkiss' Pad, and Cab.....35¢
 Batches Bed Keys.....½ doz \$4.00, 40¢
 Wollensak Tinned.....50¢10¢

Knife Sharpeners—

Parkin's.....Applewood Handles.....½ doz \$6.00, 40¢
 Rosewood or Cocobolo.....½ doz \$8.00, 40¢

Knives—

Wilson's Butcher Knives.....25¢30¢
 Ames' Butcher Knives.....25¢
 Foster Bros' Butcher, &c.....40¢
 Nichols' Butcher Knives.....40¢10¢
 Ames' Shoe Knives.....20¢25¢
 Ames' Bread Knives.....½ doz \$1.50, 15¢20¢
 Moran's Shoe and Bread.....20¢
 Hay and Straw.....See Hay Knives.
 Table and Pocket.....See Cutlery.
 Corn, Auburn Mfg. Co. Western Pat.....\$2.00
 Corn, Auburn Mfg. Co. Crescent.....\$3.50

Knobs—

Door Mineral.....65¢68¢
 Door Por. Jap'd.....75¢78¢
 Door Por. Nickel.....\$2.00, 2.25
 Door Por. Plated, Nickel.....\$2.00, 2.25
 Drawer, Porcelain.....60¢10¢60¢10¢10¢
 Hemlock Door Knob.....40¢10¢50¢
 Yale & Towne Wood, list Dec. 1886.....40¢
 Furniture Plain.....75¢ gro inch, 40¢
 Furniture, Wood Screws.....25¢10¢
 Base, Rubber Tip.....70¢10¢5¢
 Picture, Judd's.....60¢10¢10¢70¢
 Picture, Sargent's.....70¢10¢
 Picture, Hemlock.....35¢5¢
 Shutter, Porcelain.....65¢10¢
 Carriage, Jap.....½ gro 80¢, 60¢10¢

Ladles—

Melting, Sargent's.....55¢10¢
 Melting, Reading.....35¢10¢
 Melting, Monroe's Pat.....½ doz \$4.00, 40¢
 Melting, P. S. & W.....35¢10¢40¢
 Melting, Warner's.....30¢

Lawn Mowers—

Standard list.....50¢10¢
 Quaker City.....60¢10¢
 Enterprise.....60¢10¢

Lanterns—

Tubular—
 Plain with Guards, ½ doz.....\$4.00, 4.25
 Lift Wire, with Guards.....\$4.50, 4.75
 Square Plain, with Guards.....\$4.00, 4.25
 30, Lift Wire, with Guards.....\$4.25, 4.50
 Without Guards, 25¢ ½ doz less.

Miscellaneous.

Police, Small, \$6.00; Medium, \$7.25; Large, \$9.75.....20¢25¢

Lemon Squeezers—

Porcelain Lined, No. 1.....½ doz \$6.00, 25¢30¢
 Wood, No. 2.....½ doz \$3.00, 35¢
 Wood, Common.....½ doz \$1.70, 1.75
 Dunlap's Improved.....½ doz \$3.75, 30¢
 Sammis.....No. 2, \$9.12; No. 1, \$8.12; No. 3, \$7.12; No. 4, \$6.12; No. 5, \$5.12; No. 6, \$4.12; No. 7, \$3.12; No. 8, \$2.12; No. 9, \$1.12; No. 10, \$0.12.
 Little Giant.....50¢60¢5¢
 King.....40¢5¢

Lines—

Cotton and Linen Fish, Draper's.....50¢
 Draper's Chalk.....60¢
 Draper's Mason's Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25; No. 6, \$3.75; No. 7, \$4.25; No. 8, \$4.75; No. 9, \$5.25; No. 10, \$5.75.
 Sanison, Cotton, No. 4, \$2; No. 4½, \$2.50; No. 5, \$3.
 Silver Lake, Braided, No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50; No. 4, \$8.00; No. 5, \$8.50; No. 6, \$9.00; No. 7, \$9.50; No. 8, \$10.00; No. 9, \$10.50; No. 10, \$11.00.
 Mason's Colored Cotton.....45¢
 Wire Clothes.....Nos. 18 19 20 \$3.60 \$3.80 \$4.00

Ventilator Cord, Samson Braided, White or Drab Cotton, ½ doz \$7.50, 20¢

Locks, &c.—

Door Locks, Latches, &c.
 List Dec. 30, '86, chgd Feb. 2, '87.....50¢10¢60¢85¢
 Mallory, Wheeler & Co., list July, '88.....50¢10¢60¢
 Sargent & Co., list Aug. 1, '88, 55¢2¢
 Reading Hardware Co., list Feb. 2, '88.....10¢60¢10¢
 55¢60¢10¢
 Livingston & Co.....70¢
 Note.—Lower net prices often made.
 Perkins' Burglar Proof.....60¢25¢
 Plate.....35¢25¢
 F. Many's "Extension Cylinder" \$10.50
 Barnes Mfg. Co.....40¢40¢10¢
 Yale Corrugated Key.....33¢45¢
 Deltz Flat Key.....30¢
 L. & C. Round Key Latches.....30¢10¢
 L. & C. Flat Key Latches.....35¢10¢
 Romer's Night Latches.....15¢
 Yale, new list.....35¢
 Sheperdson or U. S.....35¢
 Felter or American.....40¢10¢
 Seed's N. Y. Hasp Lock.....25¢

Cabinet—

Eagle, Gaylord Par. list March, '84, rev. ker and Corbin.....Jan. 1, '85, 35¢2¢
 Deltz, Nos. 30 to 38.....40¢
 Deltz, Nos. 51 to 63.....40¢10¢
 Deltz, Nos. 86 to 96.....30¢
 Stoddard Lock Co.....60¢38¢45¢
 "Champion" Night Latches.....40¢
 Barnes Mfg. Co.....40¢40¢10¢
 Eagle and Corbin Trunk.....25¢25¢
 "Champion" Cab. and Combin.....33¢45¢
 Yale.....33¢45¢
 Romer's.....25¢

Padlocks—

List Dec. 23, '84.....75¢75¢10¢
 Yale Lock Mfg. Co.'s.....35¢45¢
 Eagle.....25¢45¢
 Eureka, Eagle Lock Co.....40¢25¢
 Romer's, Nos. 0 to 91.....30¢
 Romer's Scandinavian, &c., Nos. 100 to 605.....15¢
 A. E. Deltz.....40¢
 Champion Padlocks.....40¢
 Hotchkiss.....40¢
 Star.....45¢
 Horseshoe.....½ doz \$9.40, 40¢10¢
 Barnes Mfg. Co.....40¢40¢10¢
 Nock's.....30¢
 Brown's Pat.....30¢40¢10¢
 Scandinavian.....30¢40¢10¢
 Fraim's Pat. Scandinavian low list.....60¢
 Ames Sword Co. up to No. 150.....40¢
 Ames Sword Co. above No. 150.....50¢

Lumber Tools.

Ring Peavies, "Blue Line".....½ doz \$20.00
 Ring Peavies, Common.....½ doz \$18.00
 Steel Socket Peavies.....½ doz \$21.00
 Mail, Iron Socket Peavies.....½ doz \$19.00
 Cant Hooks, "Blue Line".....½ doz \$16.00
 Cant Hooks, Common Finish.....½ doz \$14.00
 Cant Hooks, Mail, Socket Clasp, "Blue Line" Finish.....½ doz \$16.00
 Cant Hooks, Mail, Socket Clasp, Common Finish.....½ doz \$14.00
 Cant Hooks, Clip Clasp, "Blue Line" Finish.....½ doz \$14.00
 Cant Hooks, Clip Clasp, Common Finish.....½ doz \$12.00
 Hand Spikes.....½ doz 6 ft., \$15.00; 8 ft., \$20.00
 Pike Poles, Pike & Hook, ½ doz, 17 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50.
 Pike Poles, Pike only, ½ doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00.
 Pike Poles, not ironed, ½ doz, 12 ft., \$6.00; 14 ft., \$7.00; 16 ft., \$8.00; 18 ft., \$12.00; 20 ft., \$16.00.
 Setting Poles, ½ doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00.
 Swamp Hooks.....½ doz \$18.00

Lustro—

Four-ounce Bottles.....½ doz, \$1.75; ½ gross.....\$17.00

Mallets—

Hickory.....20¢10¢20¢10¢10¢
 Lignumvite.....20¢10¢20¢10¢10¢
 B. & L. Block Co., Hickory & L. V.....30¢30¢10¢

Match Safes—

Dangerfield's Self Igniting.....½ doz \$1.50.

Mattocks, Regular list.....60¢5¢60¢10¢

Meat Cutters—

Dixon's ½ doz.....40¢5¢
 Nos. 1 2 3 4 \$14.00 \$17.00 \$19.00 \$30.00
 Woodruff's ½ doz.....40¢5¢
 Nos. 1 2 3 4 \$10.00 \$15.00 \$15.00

Champion ½ doz.....40¢45¢

Hales Pattern ½ doz.....\$22.00 \$27.00 \$40.00
 Nos. 1 2 3 4 \$11.00 \$12.00 \$13.00 \$15.00

American.....30¢
 Nos. 1 2 3 4 \$5.00 \$7.00 \$10.00 \$15.00

Enterprise.....30¢
 Nos. 1 2 3 4 \$3.00 \$4.00 \$5.00 \$6.00

Pennsylvania.....40¢10¢
 Nos. 1 2 3 4 \$24.00 \$28.00 \$36.00 \$28.00

Miles' Challenge ½ doz.....45¢45¢10¢
 Nos. 1 2 3 \$22.00 \$30.00 \$40.00

Home No. 1.....½ doz, \$26.00, 55¢10¢
 Draw Cut, each:
 Nos.

Molasses Gates—

Stebbin's Pat.	70¢&71¢
Stebbin's Genuine	60¢&10¢
Stebbin's Tinned Ends	40¢&10¢
Chase's Hard Metal	50¢&10¢
Bush's	20¢
Lincoln's Pattern	70¢&71¢
Weed's	20¢&10¢

Boss, per doz:

Nos. 1, 87; No. 2, 88; No. 3, 89; No. 4, 90.

\$10.00 per doz, \$18.00 per doz

Money Drawers—

per doz, \$3.00, 25¢

Muzzles—

Safety, per doz, \$3.00, 25¢

Nails, see Trade Report.

Wire Nails & Brads, list July 14, '87

Wire Nails, Standard Penny, 70¢&10¢

\$2.50 per doz, \$2.60

Nail Puller—

Curtiss Hammer, per doz \$9.00

Giant, No. 1, per doz \$30.00, 10¢

Pelican, per doz \$9.00, 25¢

Boss, per doz \$30.00, 30¢

Lighting, per doz \$21.00

Nail Sets—

Square, per gr, \$4.00 per doz

Round, per gr, \$3.25

Cannon's Diamond Point, per gr, \$12.20

Nut Crackers—

Table (H. & B. Mfg. Co.), 40¢

Blake's Pattern, per doz \$2.00, 10¢

Turner & Seymour Mfg. Co., 50¢

Nuts—

Nuts, off list Jan. 1, 1888: Square, Hex,

Hot Pressed, 5.4¢ 5.9¢

Cold Punched, 5.4¢ 5.9¢

In lots less than 100 lb, per lb, add 1/4¢; 1-lb

boxes, add 1¢ to list.

Oakum—

Government, per lb 7¢ @ 8¢

U. S. Navy, per lb 6¢ @ 7¢

Navy, per lb 5¢ @ 6¢

Oilers—

Zinc and Tin, 65¢&65¢

Brass and Copper, 50¢&10¢

Malleable, Hammers, Improved, No. 1,

\$3.00; No. 2, \$4.00; No. 3, \$4.40 per doz.

10¢&10¢

Malleable, Hammers, Old Pattern, same

list, 40¢

Prior's Pat. or "Paragon" Zinc,

60¢&10¢

Prior's Pat. or "Paragon" Brass, 50¢

Olmstead's Tin and Zinc, 60¢

Olmstead's Brass and Copper, 50¢

Broughton's Zinc, 60¢

Broughton's Brass, 50¢

Packing, Steam—

Rubber—

Standard, 60¢&10¢

Extra, 50¢&10¢

N. Y. B. & P. Co., Standard, 50¢&10¢

N. Y. B. & P. Co., Empire, 70¢

N. Y. B. & P. Co., Salamander, 70¢

Jenkins' Standard, 65¢, 30¢

Miscellaneous—

American Packing, 10¢&11¢

Russia Packing, 14¢

Italian Packing, 13¢&14¢

Cotton Packing, 15¢&17¢

Jute, 7¢&8¢

Padlocks—

See Locks.

Pails—

Galvanized Iron—

Quarts, 10 12 14

Hill's Light Weight, per doz \$2.75 3.00 3.25

Hill's Heavy Weight, per doz 3.00 3.25 3.75

Whiting's, 2.75 3.00 3.25

Sidney Shephard & Co., 2.80 3.00 3.40

Iron Clad, 2.75 3.00 3.25

Fire Buckets, 2.75 3.25 3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—

Star Pails, 12 qt, per doz \$4.50

Fire, Stable and Milk, 14 qt, per doz \$5.85

Pencils—

Faber's Carpenters', high list 50¢

Faber's Round Gilt, per gro \$5.25

Dixon's Lead, per gro \$4.50

Dixon's Lumber, per gro \$6.75

Dixon's Carpenters', 40¢&10¢

Picks—

Railroad or Adae Eye, 5 to 6, \$12.00;

6 to 7, \$13.00, 60¢&50¢&10¢

Picture Nails—

Brass Head, Sargent's list, 50¢&10¢

Brass Head, Combination list, 50¢&10¢

Porcelain Head, Sargent's list, 50¢&10¢

Porcelain Head, Combination list, 40¢&10¢

Niles' Patent, 40¢

Pinking Irons—

per doz 65¢ net

Pipe, Wrought Iron—

List March 23, 1887.

1½ and under, Plain, 55¢

1½ and under, Galvanized, 50¢

1½ and over, Plain, 65¢&2½¢

1½ and over, Galvanized, 55¢&2½¢

Boiler Tubes, Iron, 60¢&2½¢

Plane Irons—

Plane Irons, 20x10	20x10
Plane Irons, Butcher's, \$5.00	\$5.25 to \$2
Plane Irons, Buck Bros	30¢
Plane Irons, Auburn Tool Co., "This"	40¢
Sandusky Tool Co.	40¢
Single and Cut	30¢
Double	40¢
L. & I. J. White	25¢

Pliers and Nippers—

Button's Patent	30¢&10¢
Hall's No. 2, 5 in., \$13.50	No. 4, 7 in.
\$21.00 per doz	20¢&10¢
Humason & Beckley Mfg. Co.	50¢&10¢
Gas Pliers, Custer's Nickel Plated	60¢
Eureka Pliers and Nippers	40¢
Russell's Parallel	25¢
P. S. & W. Cast Steel	50¢
P. S. & W. Tinnars' Cutting Nippers	add 5¢ dis 10¢
Carew's Pat. Wire Cutters	per doz \$12.00, 30¢&5¢
Morrill's Parallel, per doz	\$12.00, 30¢&5¢
Cronk's 8 in., \$15.00; 10 in.	\$21.00, 40¢&10¢

Plumbs and Levels—

Regular List	70¢&10¢
Disston's	45¢&10¢
Pocket Levels	70¢&10¢
Davis Iron Levels	30¢
Davis' Inclination	10¢&10¢

Polish, Metal.

Prestoline, 20¢&10¢

Krestoline Paste, 33¢

Gaston's Silver Compound, 33¢

Pokes, Animal—

Bishop's I. X. L.	per doz \$6.50
Bishop's O. K.	per doz \$5.50
Bishop's Pioneer	per doz \$3.75
Bishop's American	per doz \$3.00

Poppers, Corn—

Round or Square, 1 qt., per gr \$12.00 per 15.00

Round or Square, 2 qt., per gr \$25.00 per 26.00

Post Hole and Tree Augers and Diggers—

Samson Post Hole Digger, per doz	\$36.00, 25¢&10¢
Fletcher Post Hole Augers, per doz	\$36.00, 20¢
Eureka Diggers, per doz	\$16.00 per 17.00
Leed's, per doz	\$8.00 per 9.00
Vaughan's Post Hole Auger, per doz	\$15.00 per 14.00
Kohler's Little Giant, per doz	\$15.00
Kohler's Hercules, per doz	\$15.00
Kohler's New Champion, per doz	\$15.00
Schneider, per doz	\$18.00
Ryan's Post Hole Diggers, per doz	\$24.00
Cronk's Post Bars, per doz	\$60.00
Gibb's Post Hole Digger, per doz	\$30.00, 40¢&10¢

Potato Parers—

White Mountain, per doz	\$5.00 per 5.50
Antrim Combination, per doz	\$8.00
Hoosier, per doz	\$13.50

Pruning Hooks and Shears—

Disston's Combined Pruning Hook and	Saw, per doz \$18.00, 20¢&10¢
Disston's Pruning Hook, per doz	\$12.00, 20¢&10¢
E. S. Lee & Co.'s Pruning Tools, per doz	\$3.75 per 4.50 net
Henry's Pruning Shears, per doz	\$4.25 per 4.50 net
Wheeler, M. & C. Co.'s Combination, per doz	\$12.00, 20¢
Dunlap's Saw and Chisel, per doz	\$8.50, 30¢
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25	

Pulleys—

Hot House, Awning, &c., 60¢&10¢	
Japanned Screw, 60¢&10¢	
Brass Screw, 60¢&10¢	
Japanned Slide, 60¢&10¢	
Japanned Clothes Line, 60¢&10¢	
Empire Sash Pulley, 55¢&60¢	
Moore's Sash, Anti-Friction, 50¢	
Hay Fork, Solid Eye, \$4.00; 5 in. Solid,	\$5.70
Hay Fork, "Anti-Friction" 5 in. Solid,	\$5.70
Hay Fork, "F" Common and Pat.	50¢
Bushed, 50¢	
Hay Fork, Tarbox Pat. Iron, 30¢	
Hay Fork, Reed's Self-Lubricating, 60¢	
Shade Rack, 45¢	
Tackle Blocks, See Blocks	
Moore's Anti-Friction 5 in. Wheel, per doz	\$12.00, 40¢

Pumps—

Clatsen, Best Makers	50¢&10¢
Pitcher Spout, Best Makers	60¢&10¢
Pitcher Spout, Cheaper Goods	70¢&5¢

Punches—

Saddlers' or Drive, good, per doz	60¢&5¢
Bemis & Call Co.'s Cast Steel Drive, 50¢&5¢	
Bemis & Call Co.'s Springfield Socket, 50¢&5¢	
Spring, good quality, per doz	\$2.50 per 2.60
Spring, Leach's Pat., 15¢	
Bemis & Call Co.'s Spring and Check, 40¢	
Solid Tinnars', per doz	\$1.44, 55¢
Tinnars' Hollow Punches, 20¢&2¢	
Rice Hand Punches, 15¢	
Avery's Revolving, 30¢&10¢	
Avery's Saw-Set and Punch, See Saw Sets.	

Rail—

Sliding Door, Wrt Brass, per 35¢	15¢
Sliding Door, Bronzed Wrt Iron, per ft.	7¢
Sliding Door, Iron, Painted, per foot	4¢, 40¢
Barn Door, Light 14, per 100 feet	\$2.00 2.50 3.10, 10¢
B. D. for N. E. Hangers—	
Small, Med. Large.	\$2.15 2.70 3.25, net
Terry's Wrought Iron, per foot	45¢&5¢
Victory Track Rail, 7 1/2 foot, 50¢&5¢	
Carrier Steel Rail, per foot	45¢
Moore's Wrought Iron, 25¢	

Rakes—

Cast Steel, Association goods	65¢
Cast Steel, outside goods	60¢&10¢
Gibbs Lawn Rake, 12.00, 70¢&5¢	
Canton Lawn Rake, \$9.00, 50¢	
Ft. Madison Prize Bow Brace and Peer-	less
Fort Madison Steel Tooth Lawn Rake,	\$6.00, 25¢

Razors—

J. R. Torrey Razor Co.	20¢
Wostenholme and Butcher, \$10.00 to \$2,	10¢

Razor Straps—

Genuine Emerson	60¢&60¢
Imitation, per doz \$2.00, 20¢&5¢	
Torrey's	20¢
Badger's Belt and Com.	per doz \$2.00
Lamont Combination	per doz \$4.00

Rivets and Burrs—

Copper	50¢
Iron, list Nov. 17, '87	50¢

Rivet Sets—

50¢&10¢

Rods—

25¢&2¢

Stair, Black Walnut, per doz 40¢

Rollers—

Barn Door, Sargent's list, 60¢&10¢

Acme Moore's Anti-Friction, 55¢

Union Barn Door Roller, 70¢

Rope—

Manufacturers' prices for large lots:	
Manila, 1/2 in. and larger	per lb 15¢
Manila, 1/4 in. and 1/2 in.	per lb 16¢
Manila, 1/4 in. and 1/2 in.	per lb 16¢
Manila Tarred Rope	per lb 15¢
Manila, Hay Rope	per lb 15¢
Sisal, 1/2 inch and larger	per lb 12¢
Sisal, 1/4 and 1/2 in.	per lb 13¢
Sisal, Hay Rope	per lb 12¢
Sisal, Tarred Rope	per lb 12¢
Sisal, Medium Lathe Yarn	per lb 11¢
Cotton Rope	per lb 15¢
Jute Rope	per lb 15¢

Rules—

Boxwood	80¢&10¢
Starrett's Rules and Straight Edges,	Steel, 25¢&10¢

Sad Irons—

From 4 to 10, at factory	per 100 lb, \$2.40 per 2.55
Self-Heating, per doz	\$9.00 net
Leason's Shield and Toilet, 25¢	
Mrs. Pott's Irons	40¢&10¢
Enterprise Star Irons	40¢
Combined Fluter and Sad Iron, per doz,	\$15.00, 15¢
Qx Reversible, Self-Fluter	per doz \$24.00 net
Chinese Laundry (N.E. Butt Co.) 8 1/2, 15¢	
New England, 15¢	
Mahony's Troy Pol. Irons	25¢
Sensible	20¢&20¢
National Self-Heating	30¢

Sand and Emery Paper and Cloth—

List April 19, 1888	40¢&10¢
Sibley's Emery and Crocus Cloth	30¢

Sash Cord—

Common	per lb 10¢
White Cotton Braided, fair	per lb 13¢
Common Russia Sash	per lb 13¢
Patent	per lb 15¢
Cable Laid Italian Sash	per lb 22¢
India Cable Laid	per lb 13¢

Silver Lake—

A Quality, White, 50¢	10¢&10¢
B Quality, White, 50¢	10¢&10¢
C Quality, White, 50¢	10¢&10¢
Sylvan Spring, Extra Braided, White, 34¢	
Sylvan Spring, Extra Braided, White, 30¢	
Samson	30¢
Braided, White Cotton, 50¢	30¢&30¢
Braided, Drab Cotton, 50¢	30¢&30¢
Braided, Italian Hemp, 50¢	30¢&30¢
Braided, Linen, 80¢	30¢&30¢

Sash Locks—

Clark's, No. 1, \$10; No. 2, \$8 per gr.	33¢
Ferguson's	33¢
Morris and Triumph, list Aug. 16, 1886	60¢

Victor	60¢&10¢
Walker's	10¢
Attwell Mfg. Co.	25¢&33¢
Reading	60¢&10¢
Hammond's Window Springs	40¢
Common Sense, Jap'd, Cop'd and	Brzd.
Common Sense, Nickel Plated	per gr \$4.00

Common Sense, Jap'd, Cop'd and Br'zed.....	per gr \$4.00
Common Sense, Nickel Plated.....	per gr \$10.00
Universal.....	30
Kempshall's Gravity.....	60

Machine-
Flat Head, Iron.....55¢
Round Head, Iron.....50¢

Bench and Hand-
Bench, Iron.....55¢10¢55¢10¢10¢
Bench, Wood, Beech..... ¢ doz \$2.25
Bench, Wood, Hickory.....20¢10¢
Hand, Wood.....25¢10¢25¢10¢5¢
Lag, Blunt Point.....75¢75¢10¢
Coach and Lag, Gimlet Point.....75¢
Hand Rail, Sargent's.....60¢25¢
Hand Rail, H. & B. Mfg. Co.....70¢10¢75¢
Hand Rail, Am. Screw Co.....75¢
Jack Screws, Millers Falls list.....50¢50¢5¢
Jack Screws, P. S. & W.....35¢
Jack Screws, Sargent.....60¢10¢60¢10¢5¢
Jack Screws, Stearns.....40¢40¢10¢

Scroll Saws-
Lester, complete, \$10.00.....25¢
Rogers, complete, \$4.00.....25¢
Barnes' Builders' and Cabinet Makers'.....\$15.....35¢
Barnes' Scroll Saw Blades.....35¢

Scythe Snaths..... 50¢2¢

Shears-
American (Cast) Iron.....75¢10¢75¢10¢5¢
Pruning.....See Pruning Hooks and Shears.
Barnard's Lamp Trimmers..... ¢ doz \$3.75
Timmers.....20¢2¢
Seymour's, List.....60¢10¢10¢60¢10¢10¢5¢
Heinrich's, List, Dec. 1881.....60¢10¢10¢60¢10¢10¢5¢
Heinrich's Tailor's Shears.....33¢4¢
First quality C. S. Trimmers.....80¢80¢10¢
Second quality C. S. Trimmers.....80¢10¢80¢10¢10¢
Acme Cast Shears.....10¢10¢
Diamond Cast Shears.....10¢
Clippier.....10¢10¢
Victor Cast Shears.....75¢10¢75¢10¢5¢
Howe Bros. & Hulbert, Solid Forged Steel.....40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.....60¢
Clausen Shear Co., Japanised.....70¢
Clausen Shear Co., Nickeled, same list. 00¢

Sheaves-
Sliding Door-
M. W. Co., list July, 1888.....50¢10¢60¢45¢
R. & E., list Dec. 18, 1885.....55¢20¢
Corbin's list.....60¢10¢2¢
Patent Roller.....60¢10¢2¢
Patent Roller, Hatfield's.....75¢
Russell's Anti-Friction, list Dec. 18, 1885.....60¢2¢
Moore's Anti-Friction.....50¢

Sliding Shutter-
R. & E. list Dec. 18, 1885.....60¢10¢2¢
Sargent's list.....60¢10¢
Reading list.....60¢10¢10¢

Ship Tools-
L. & J. White.....20¢5¢
Albertson Mfg. Co.....25¢

Shoes, Horse, Mule, &c.-
Horse-
Burden's, Perkins', Phoenix, at factory.....\$4.00

Mule-
Add ¢1 per keg to above prices.
On Wrought-
Ton lots..... ¢ 10 9¢
100 tons lots..... ¢ 9 9¢
500 tons lots..... ¢ 8 10¢

Shot-
(Eastern prices 2¢ off, cash, 5 days.
Drop, 5 bag, 25 lb.....\$1.20
Drop, 5 bag, 5 lb.....1.25
Buck and Chilled, 5 25-b bag.....1.45
Buck and Chilled, 5 5-b bag......34

Shovels and Spades-
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20¢
NOTE.-Jobbers frequently give 5¢ to 7¢ extra on above.
Griffith's Black Iron.....50¢10¢
Griffith's C. S.....60¢60¢10¢
Griffith's Solid C. S. R. R. Goods.....20¢
Old Colony (Sanford Fork & Tool Co.) 20¢
St. Louis Shovel Co.....20¢20¢15¢
Hussey, Binns & Co.....15¢25¢
Hubbard, Co.....30¢20¢75¢
Lehigh Mfg. Co.....50¢10¢
Payne Petroleum & Son, list January, 1886.....30¢
Remington's (Lowman's Patent).....30¢40¢40¢
Rowland's, Black Iron.....50¢10¢
Rowland's Steel.....60¢5¢60¢10¢

Shovels and Tongs-
Iron Head.....60¢10¢60¢10¢5¢
Brass Head.....60¢10¢10¢

Skeins, Thimble-
Western list.....75¢2¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887, 20¢
Coldbrookdale Iron Co.....50¢10¢
Utica P. S. T. Skeins.....60¢
Utica Turned and Fitted.....35¢

Sieves-
Buffalo Metallic, S. S. & Co.....50¢25¢10¢
Barley Iron Sifters..... ¢ gr \$2.00
Electric..... ¢ gr \$2.10
Hunter's..... ¢ gr \$18.00
Smith's Adjustable Sifters..... ¢ doz \$2.00
Smith's Adjustable Milk Strainer..... ¢ doz \$2.00
Smith's Adjustable T. & C. Strainer..... ¢ doz, \$1.25

Sieves, Wooden Rtm-
Mesh 18, Nested, 70¢ 50¢
Mesh 24, Nested, 85¢ \$1.00
Mesh 24, Nested, 50¢ 1.10

Slates-
School, by case.....50¢10¢

Snaps, Harness, &c.-
Anchor (T. & S. Mfg. Co.).....65¢
Fitch's (Bristol).....60¢10¢
Hotchkiss.....10¢
Andrews.....50¢
Sargent's Patent Guarded.....70¢10¢10¢
German, new list.....40¢10¢
Coverl.....50¢2¢
Covert, New Patent.....50¢5¢2¢
Covert, New R. E.....60¢2¢
Covered Spring.....60¢10¢10¢

Soldering Irons-
Covert's Adjustable, list Jan. 1, 1886.....35¢2¢

Spoke Shaves-
Iron.....45¢
Bailey's (Stanley R. & L. Co.).....40¢10¢
Wearns.....20¢10¢30¢

Spoke Trimmers-
Bonney's..... ¢ doz \$10.00, 50¢
Stearns.....20¢10¢
Ives', No. 1, \$15.00; No. 2, \$12.00 ¢ doz.....50¢10¢
Douglas..... ¢ doz \$9.00, 20¢

Spoons and Forks-
Tinned Iron-
Basting, Cen. Stamp. Co.'s list.....70¢10¢
Solid Table and Tea, Cen. Stamp. Co.'s list.....70¢10¢
Buffalo S. S. & Co.....33¢2¢
Silver Plated-(4 mos. or 5¢ cash 30 days).
Meriden Brit. Co., Rogers.....50¢
C. Rogers & Bros.....50¢
Rogers & Bro.....50¢
Reed & Barton.....50¢
Wm. Rogers Mfg. Co.....50¢10¢60¢
Simmons, Hall, Miller & Co.....50¢10¢
Holmes & Edwards Silver Co.'s Silver Plated.....50¢10¢60¢
No. 67 Mexican Silver.....50¢10¢
No. 30 Silver Metal.....50¢10¢
No. 24 German Silver.....50¢10¢
No. 49 Nickel Silver.....50¢
German Silver.....60¢50¢5¢
German Silver, Hall & Elton.....50¢5¢ cash
Nickel Silver.....60¢5¢50¢10¢5¢ cash
Britannia.....60¢
Boardman's Flat Ware.....50¢10¢
Boardman's Nickel Silver.....60¢
Boardman's Britannia Spoons, case lots..... ¢ 4 mos.
Springs-
Elliptic, Concord, Platform and Half Scroll.....60¢60¢5¢
Cliff's Bolster Springs.....25¢

Squares-
Steel and Iron.....75¢10¢80¢
Nickel-Plated.....75¢10¢80¢
Try Square and T Bevels.....60¢10¢10¢70¢
Disston's Try Square and T Bevels.45¢10¢
Winterbottom's Try and Miter.....30¢10¢
Starrett's Micrometer Calliper Squares.....25¢
Avery's Flush Bevel Squares.....30¢5¢

Staples-
Fence Staples, Galvanized, } Same price as Barb Wire.
Fence Staples, Plain.....} See Trl. Rep.

Steelyards..... 40¢10¢50¢

Stocks and Dies-
Blacksmith's
Waterford Goods.....30¢5¢30¢10¢
Butterfield's Goods.....30¢5¢30¢10¢
Lightning Screw Plate.....25¢30¢
Reece's New Screw Plates.....33¢45¢40¢

Stone-
Hindustan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone..... ¢ 21¢
Washita Stone, Extra..... ¢ 19¢23¢
Washita Stone, No. 1..... ¢ 14¢15¢
Washita Stone, No. 2..... ¢ 10¢11¢
Washita Slips, No. 1, Extra..... ¢ 30¢38¢
Washita Slips, No. 1..... ¢ 24¢25¢
Arkansas Stone, No. 1, 4 to 6 in..... ¢ \$1.50
Arkansas Stone, No. 1, 6 to 9 in..... ¢ \$1.85
Turkey Oil Stone, 4 to 8 in..... ¢ 40¢
Turkey Slips..... ¢ \$1.00¢1.50
Lake Superior, Chase..... ¢ 16¢
Lake Superior Slips, Chase..... ¢ 31¢32¢
Seneca Stone, Red Paper Brand.....18¢2¢

Seneca Stone, High Rounds..... ¢ 20¢25¢
Seneca Stone, Small Whets..... ¢ gro \$2.00

Stove Polish-
Joseph Dixon's..... ¢ gro \$6.00, 10¢
Gem..... ¢ gro \$4.50, 10¢
Sweden Iron Carpet..... ¢ gro \$3.50
Mirror..... ¢ pro \$6.00.....25¢
Lustro..... ¢ gro \$4.75
Ruby..... ¢ gro \$3.75
Rising Sun, 5 gro lots..... ¢ gro \$5.50
Dixon's Plum Bago..... ¢ \$5.00
Beynton's No. 2 Day..... ¢ 2.00
Parlor Fire Stove Enamel..... ¢ gro 3 cans
Yates' Liquid.....2 3 5 10 gal.....8¢
gal.....80.80 70 80
Yates Standard Paste Polish, 10-b cans..... ¢ 15¢
Jet Black..... ¢ gro \$3.50
Japanese..... ¢ gro \$3.50
Firestone..... ¢ gro \$2.50
Diamond O. K. Enamel..... ¢ gro \$19.00
Bonnell's Liquid Stove Polish..... ¢ gro \$9.00
Bonnell's Paste Stove Polish..... ¢ gro \$6.00
Black Eagle Benzine Paste, 5 and 10 lb cans.....12¢
Black Jack Water Paste, 5 and 10 lb cans.....12¢
Nickel Plate Paste..... ¢ gro \$6.00

Tacks, Brads, &c.-
List, Jan. 2, 1888.-(Note.-Some manufacturers are selling Tacks at slightly higher prices than those named):
American Iron Carpet.....80¢80¢45¢
Steel Carpet.....80¢80¢45¢
Swedes Iron Carpet.....80¢80¢45¢
American Iron Cut.....75¢75¢10¢
Swedes Iron.....75¢6¢75¢10¢
Swedes Iron, Upholsterers'.....75¢10¢75¢10¢5¢
Tinned Swedes Iron.....75¢10¢75¢10¢5¢
Tinned Swedes Iron, Upholsterers'.....75¢10¢75¢10¢5¢
Gimp and Lace.....75¢10¢75¢10¢5¢
Tinned Gimp and Lace.....75¢10¢75¢10¢5¢
Swedes Iron Trimmers'.....75¢10¢75¢10¢5¢
Swedes Iron Miners'.....75¢10¢75¢10¢5¢
Swedes Iron Bill Post

CURRENT METAL PRICES.

MARCH 20, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
4 to 2 in. round and square...	1.90 @ ..
1 to 6 in. x 3/4 to 1 in.	
Refined Iron:	
4 to 2 in. round and square...	
1 to 4 in. x 3/4 to 1 1/2 in.	2.00 @ 2.10
4 1/2 to 6 in. x 3/4 to 1 in.	
1 to 6 in. x 3/4 and 5-16	2.20 @ 2.30
Rods—4 and 11-16 round and sq.	2.10 @ 2.20
Bands—1 to 6 x 3-16 to No. 12	2.20 @ 2.30
"Burden Best" Iron, base price	3.00 @ ..
Bureau's "H. B. & S." Iron, base price	2.80 @ ..
"Ulster"	3.10 @ ..
Norway Rods	4.00 @ 5.00

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery.	
Toe Calk, Tire and Sleigh Shoe, base price in small lots	2 1/2
Best Cast Steel, base price in small lots	8 1/2
Best Cast Steel Machinery, base price in small lots	5

Sheet Iron from Store.

Common American.	R. G. Cleaned.
10 to 16	2.75 @ 2.80
17 to 24	2.85 @ 3.00
21 to 24	3.00 @ 3.10
25 and 36	3.30 @ 3.50
27	3.35 @ 3.75
28	3.50 @ 4.00
B. B.	2d qual.
Galv'd, 14 to 20	4.50 @ 4.38
Galv'd, 1 to 24	4.87 1/2 @ 4.75
Galv'd, 25 to 36	5.25 @ 5.12
Galv'd, 27	5.62 1/2 @ 5.48
Galv'd, 28	6.00 @ 5.85
Patent Planished	5 1/2 @ 5 1/4
Russin	9 1/4 @ 9 1/2
American Cold Rolled B. B.	5 1/2 @ 7 1/2

English Steel from Store.

Best Cast	15
Extra Cast	16 1/2
Swaged Cast	16
Best Double Shear	15
Bilster, 1st quality	12
German Steel, Best	10
2d quality	9
3d quality	8
Sheet Cast Steel, 1st quality	15
2d quality	14
3d quality	12 1/2

METALS.

Tin.

Banca, Pigs	23 1/2
Straits, Pigs	23
English, Pigs	23 1/4
Straits in Bars	24

Tin Plates.

Charcoal Plates.—Bright.	Per box.
Weyn Grade	
IC, 10 x 14	\$5.75 @ \$6.00
IC, 12 x 12	6.00 @ 6.25
IC, 14 x 20	5.75 @ 6.00
IC, 20 x 28	12.00 @ 12.50
IX, 10 x 14	7.25 @ 7.50
IX, 12 x 12	7.50 @ 7.75
IX, 14 x 20	7.25 @ 7.50
IX, 20 x 28	15.00 @ 15.50
DC, 12 1/2 x 17	5.50 @ 5.75
DX, 12 1/2 x 17	7.00 @ 7.25
Call and Grade	
IC, 10 x 14	5.75 @ 6.00
IC, 12 x 12	6.00 @ 6.25
IC, 14 x 20	5.75 @ 6.00
IX, 10 x 14	7.25 @ 7.50
IX, 12 x 12	7.50 @ 7.75
IX, 14 x 20	7.25 @ 7.50
IX, 20 x 28	15.00 @ 15.50
DC, 12 1/2 x 17	5.50 @ 5.75
DX, 12 1/2 x 17	7.00 @ 7.25
Alaway Grade	
IC, 10 x 14	5.00 @ 5.12 1/2
IC, 12 x 12	5.12 1/2 @ 5.25
IC, 14 x 20	5.00 @ 5.12 1/2
IX, 10 x 14	11.00 @ ..
IX, 12 x 12	6.00 @ ..
IX, 14 x 20	6.25 @ ..
IX, 20 x 28	12.00 @ ..
DC, 12 1/2 x 17	4.75 @ 5.00
DX, 12 1/2 x 17	5.75 @ 6.00
Coke Plates.—Bright.	
Steel Coke.—IC, 10 x 14, 14 x 20	\$4.75 @ \$5.00
10 x 20	7.25 @ 7.50
20 x 28	9.75 @ 10.25
IX, 10 x 14, 14 x 20	5.50 @ 5.75
IX, 14 x 20	4.40 @ 4.60
BY Grade.—IC, 10 x 14, 14 x 20	
Charcoal Plates.—Tern.	
Dean Grade.—IC, 14 x 20	\$4.40 @ \$4.62 1/2
20 x 28	9.00 @ 9.25
IX, 14 x 20	4.40 @ 5.62 1/2
20 x 28	11.00 @ 11.37 1/2
Abecarac Grade.—IC, 14 x 20	4.25 @ 4.50
20 x 28	8.70 @ 9.00
IX, 14 x 20	5.25 @ 5.50
20 x 28	10.50 @ 10.80

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	\$4.75 @ \$5.00
10 x 20	7.25 @ 7.50
20 x 28	9.75 @ 10.25
IX, 10 x 14, 14 x 20	5.50 @ 5.75
IX, 14 x 20	4.40 @ 4.60

Charcoal Plates.—Tern.

Dean Grade.—IC, 14 x 20	\$4.40 @ \$4.62 1/2
20 x 28	9.00 @ 9.25
IX, 14 x 20	4.40 @ 5.62 1/2
20 x 28	11.00 @ 11.37 1/2
Abecarac Grade.—IC, 14 x 20	4.25 @ 4.50
20 x 28	8.70 @ 9.00
IX, 14 x 20	5.25 @ 5.50
20 x 28	10.50 @ 10.80

Tin Boiler Plates.

IX, 14 x 28	112 sheets @ \$12.50 @ \$12.75
IX, 14 x 28	112 sheets @ 12.75 @
IX, 14 x 41	112 sheets @ 14.25 @

Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢	
Manufactured (including all articles of which Copper is a component of chief value), 45 ¢ ad valorem	

Ingot.

Lake	16 1/2 @ 17
"Anchor" Brand	16

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound.						
			Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.
30	72	25	25	25	25	25	25	25	25
30	72	25	25	25	25	25	25	25	25
30	96	25	25	25	25	25	25	25	25
30	96	25	25	25	25	25	25	25	25
48	96	25	25	25	25	25	25	25	25
48	96	25	25	25	25	25	25	25	25
60	96	25	25	25	25	25	25	25	25
60	96	25	25	25	25	25	25	25	25
84	96	25	25	25	25	25	25	25	25
84	96	25	25	25	25	25	25	25	25
Over 84 in. wide	28	30							

All Bath Tub Sheets. 16 oz. 14 oz. 12 oz. 10 oz. Per pound. \$0.33 0.30 0.32 0.35

Bolt Copper, 3/4 inch diameter and over, per pound. 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier. 28¢

12 ounce and up to 14 ounce to square foot. 29¢

10 ounce and up to 12 ounce. 31¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each. 8¢

Tinning sheets on one side, 30 x 60 each. 30¢

For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each. 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each. 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each. 12¢

Tinning sheets on one side, other sizes, per square foot. 23¢

For tinning both sides double the above prices.

Planished Copper.

Planished Copper List May 5, 1888. Net

Seamless Copper. Seamless Brass.

3/4 inch 50¢ 3/4 inch 47¢

1/2 inch 44¢ 1/2 inch 41¢

3/8 inch 42¢ 3/8 inch 39¢

1/4 inch 40¢ 1/4 inch 37¢

1/8 inch 38¢ 1/8 inch 35¢

1/16 inch 34¢ 1/16 inch 31¢

Roll and Sheet Brass.

Discount from list. 10 @ 15 ¢

High Brass Rods.

Over 1 inch diameter. 27¢

1/4 inch to 1 inch diameter, both inclusive. 24¢

No. 8 and less than 1/4 inch diameter. 26¢

Smaller than No. 8. 30¢

Hexagon, Octagon and Square, 2¢ per lb advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, \$1.50 per 100 lb.

Western Spelter 54¢ @ 53¢

"Bergensport" 54¢ @ 53¢

"Bertha" 73¢ @ 8¢

Zinc.

Duty: Sheet, 2 1/2¢ per lb.

600 lb casks. 61¢

Per lb. 71¢

Lead.

Duty: Pig, \$2 per 100 lb. Old Lead, 2¢ per lb. Pipe and Sheets, 3¢ per lb.

American 41¢

Newark 43¢

Bar, subject to trade discount. 46¢

Tin-Lined Pipe, subject to trade discount. 15¢

Block Tin Pipes, subject to trade discount. 45¢

Sheet, subject to trade discount. 63¢

Solder.

1/2 @ 1/2 (Guaranteed). 15¢

Extra Wiping. 12 1/2¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson 13 1/4¢ @ 14¢

Hallett's 13¢

Plumbers' Brass Work.

Ground Bibbs and Stops	55¢ 10¢ 2
Ground Stops, Hydrant Cocks, &c.	55¢ 10¢ 2
Corporation Cocks	55¢ 10¢ 2
Corporation Cocks, "Mueller" Pattern, from Western list	55¢ 10¢ 2
Ground Basin and Shampooing Cocks	50¢ 10¢ 2
Compression Basin Cocks	50¢ 10¢ 2
Compression Basin and Sink Cocks	50¢ 10¢ 2
Compression Pantry Cocks	50¢ 10¢ 2
Compression Double Basin and Shampooing Cocks	50¢ 10¢ 2
Compression Double Bath Cocks	50¢ 10¢ 2
Compression Bibbs, Urinal Cocks, Sill Cocks, Stops, Hopper Cocks, Hydrant Cocks and Ball Cocks	50¢ 10¢ 2
Basin Flugs and Basin Grates	55¢ 10¢ 2
Bath and Wash Tray Flugs	55¢ 10¢ 2
Bath Wastes and Washers, Bath and Basin Valves, Sewer and Vacuum Valves, Cistern Valves, Pump Valves and Strainers, Ship Closet Valves and Suction Baskets	55¢ 10¢ 2
Basin Clamps, Basin Joints and Strainers	55¢ 10¢ 2
Boiler Couplings, Ground Face, per set \$1.25	55¢ 10¢ 2
Boiler Couplings, Plain Face, per set \$1.20	55¢ 10¢ 2
Water Back Valve and Plain Couplings, Soldering Nipples and Unions	55¢ 10¢ 2
Union Joints	60¢ 10¢ 2
Hydrant Nozzles, Handles and Guides, Sockets and Clamps, Street Washer Screws and Guides	55¢ 10¢ 2
Hose Goods	55¢ 10¢ 2

Steam and Gas Fitters' Brass and Iron Work.

Brass Globe Valves	60¢ 10¢ 2
Finished Brass Globe Valves, with Finished Brass Wheels	40¢ 10¢ 2
Brass Globe Valves, with Patent Wood Wheels	60¢ 10¢ 2
Brass Globe Angle and Corner Valves	60¢ 10¢ 2
Brass Radiator Angle Valves	60¢ 10¢ 2
Brass Radiator Angle Valves, Frink's Patent	60¢ 10¢ 2
Brass Cross and Check Valves	60¢ 10¢ 2
Brass Check Valves	60¢ 10¢ 2
Brass Hose Valves	60¢ 10¢ 2
Brass and Iron Frink Valves	60¢ 10¢ 2
Brass Safety Valves	60¢ 10¢ 2
Brass Vacuum Valves	50¢ 10¢ 2
Brass Whistle Valves	60¢ 10¢ 2
Brass Balance, Back Pressure and Foot Valves	50¢ 10¢ 2
Brass Butterfly and Throttle Valves	50¢ 10¢ 2
Brass Pump Valves	50¢ 10¢ 2
Brass Steam Cocks	57 1/2¢ 10¢ 2
Brass Service, Meter and Union Meter Cocks	57 1/2¢ 10¢ 2
Brass Whistles, Water Gauges & Oil Cups	60¢ 10¢ 2
Brass Hollow Plug, Tallow and Globe Oil Cups	50¢ 10¢ 2
Brass Lubricators	60¢ 10¢ 2
Brass Air Valves	60¢ 10¢ 2
Brass Air Cocks	60¢ 10¢ 2
Brass Gauge Cocks	55¢ 10¢ 2
Brass Cylinder Cocks and Steam Bibbs	50¢ 10¢ 2
Brass Swing Joints and Expansion Joints	50¢ 10¢ 2
Brass Test Pumps	30¢ 10¢ 2
Brass Steam Fittings, Rough	60¢ 10¢ 2
Brass Steam Fittings, Finished	2¢ 10¢ 2
Brass Union Joints	60¢ 10¢ 2
Brass Soldering Unions and Nipples	55¢ 10¢ 2
Brass Hose Fittings, Fusible and Boiler Plugs	55¢ 10¢ 2
Iron Body Globe, Angle, Cross and Check Valves	65¢ 10¢ 2
Iron Body Safety, Throttle, Back Pressure, Butterfly and Foot Valves	65¢ 10¢ 2
Iron Cocks, all Iron	65¢ 10¢ 2
All Iron Valves	65¢ 10¢ 2

Miscellaneous.

Cast Iron Fittings	70¢ 1¢
Plugs and Bushings	75¢ 1¢ 0
Malleable Iron Unions	67 1/2
Malleable Iron Fittings	35

Paints.

Black, Lamp—Coach Painters'.....	23 @ 24	24
Ordinary		6
Black, Ivory Drop, fair.....	12 @ 15	15
best.....		23
Black Paint, in oil.....	45¢ 8¢; assorted cans, 11¢	
Blue, Prussian, fair to best.....	40 @ 55	
in oil.....	45 @ 55	
Chinese dry.....		70
Ultramarine.....	18 @ 30	
Brown, Spanish.....		14
Van Dyke.....	10 @ 12	
Dryers, Patent American, ass'd cans, 9¢	10¢ 7	
Green, Chrome.....	15 @ 21	
Green, Chrome in oil.....	14 @ 18	25
Green, Paris.....	good, 20¢; best, 25¢	
Green, Paris in oil.....	good, 30¢; best, 35¢	
Iron Paint, Bright Red.....	7 @ 24	
Iron Paint, Brown.....	7 @ 14	
Iron Paint, Purple.....	7 @ 14	
Iron Paint, Ground in oil, Bright Red.....	7 @ 6	
Iron Paint, Ground in oil, Red.....	7 @ 5	
Iron Paint, Ground in oil, Brown.....	7 @ 5	
Iron Paint, Ground, Purple.....	7 @ 6	
Litharge.....		6
Mineral.....		2 @ 4
Orange Mineral.....		6
Red Lead, American.....	\$1.05 @ \$1.70	
Red Venetian (Eng.) dry.....	11¢	
Red Venetian in oil.....	ass'd cans, 11¢; kegs, 8¢	
Red Indian Dry.....	9 @ 12	
Rose Pink.....	10 @	